Vol. II No. 3

Acta Psychologica

EDITA

A

G. RÉVÉSZ

AMSTERDAM

COLLEGERUNT

Fr. Ch. Bartlett, Cambridge – E. G. Boring, Cambridge, Mass. – H. J. F. W. Brugmans, Groningen – K. Bühler, Wien – C. Burt, London – T. Chiba, Sendai – E. Claparède, Genève – Th. Erismann, Innsbruck – A. Gemelli, O.F.M., Milano – P. Janet, Paris – D. Katz, Rostock, h.t. London – W. Köhler, Berlin – K. S. Lashley, Chicago – K. Marbe, Würzburg – Matataro Matsumoto, Tokyo – W. Mc. Dougall, Durham, N.C. – A. G. Michotte, Louvain – L. E. Mira, Barcelona – G. E. Müller †, Göttingen – Ch. S. Myers, London – J. P. Pavlov †, Leningrad – T. H. Pear, Manchester – J. Piaget, Genève – H. Piéron, Paris – M. Ponzo, Roma – F. Roels, Utrecht – E. J. Rubin, Kobenhavn – H. K. Schjelderup, Oslo – W. Stern, Hamburg, h.t. Duke University – K. Twardowski, Lwów – R. M. Yerkes, New Haven

THE HAGUE
MARTINUS NIJHOFF
1937

10.5

CONTENTS

Title and index volume II.

MCDOUGALL, WILLIAM, Organization of the affective life. A critical survey 233

KLÜVER, HEINRICH, Re-examination of implement-using behavior in a Cebus monkey after an interval of three years 347

PRINTED IN THE NETHERLANDS

ORGANIZATION OF THE AFFECTIVE LIFE
A CRITICAL SURVEY

WILLIAM MCDOUGALL (Duke University)

The psychology of the affective life is still so backward, so chaotic, there is so much diversity of opinion and of theory, that we have no approach to a generally accepted terminology. It is therefore necessary to introduce the topic of this article by defining, broadly and roughly, the sense in which the word 'affective' is here used.

We need a word to denote all the factors and aspects of mental life other than the cognitive or intellectual. Those who hold, like myself, that all aspects of mental life can be properly comprized under the three heads of cognition, feeling and conation, may be content to say that we need a word to denote all facts of feeling and conation as distinct from cognition. It is in that broad sense that the word ‚affective' is here used.

The purpose of this article is to show: (1) that affective process and experience (which are distinghuishable from, though not separate from or independent of, the cognitive functions) produce or involve a gradual growth, elaboration and organization of mental structure; which resulting affective structure, though not separate from or independent of the structure which underlies and is elaborated by all cognitive activities, is nevertheless distinguishable from the latter, the cognitive structure; (2) that, in order to arrive at some understanding of the nature, growth, and functioning of the affective structure, we require to study it in relative independence of the cognitive structure and functions; (3) that such study is a most important part of the task of psychology, one which has been very much neglected, in fact, until very recent years almost entirely overlooked; (4) that some progress with this neglected side of psychology is now being made; (5) that the results of recent endeavours along this line,

though widely scattered and treated in very different terminologies by various schools, may with advantage be brought together and in large measure harmonized in a consistent doctrine or theory [1]).

With these aims in view I propose to review very briefly the contributions towards the understanding of affective organization made by German, French, American and British psychologists, respectively: for our common science is still so ‚insular' that this division of the survey seems to be a convenient one.

It is obvious that ‚the psychology of ideas' in its two forms, that of Herbart and his followers and that of the English Association-School, had no room for any account of affective organization. For all organization of the mind was described in terms of systems of ideas (Vorstellungen); or, better perhaps, such organization of the mind as was recognized was described in terms of the grouping of ideas in trains and systems; and the affective life, in so far as recognized, was an accompaniment or product of the interplay of the ideas thus organized in groups or systems, or, more simply still, was merely a matter of feeling-tones accompanying the rise to consciousness of sensations, perceptions and ideas. Herbart himself and James Mill may be said to represent in their purity these two forms of the psychology of ideas. Few of the

[1]) The relations between the cognitive structure and its functions on the one hand, and the affective structure and functions on the other, as I conceive them, may be illustrated by a helpful, though very imperfect analogy, namely that presented by the constitution of a democratic State. At the risk of seeming to push the analogy too far, I will liken the intellect to the legislature; the conative functions to the activities of the executive; the feeling functions (i.e. affective functions in the stricter or narrow sense) to the activities of the judiciary. In a highly developed State each of the three branches or departments has its own organization, which functions in relative independence of the other two departments; yet each implies and is intimately related to the organization and functioning of the other two departments; but the executive and the judiciary are more intimately related to one another than either is to the legislature, and are, accordingly, less capable of being independently studied and described. Analogously, the organization and functioning of feeling and of conation are more intimately related to one another than either is to the intellect. And, as in a relatively undeveloped State, it might well be impossible to give any separate accounts of the organization and activities of executive and judiciary respectively; so also, in the human mind, the organization of conation and of feeling cannot with advantage be described or explained apart from one another, and are therefore best discussed under the one head of affective organization and functioning.

Psychology as practised and recognized up to the end of the nineteenth century may be likened to a theory of the State which recognized only the legislature and neglected to make any study of the executive and judiciary, except in so far as executive and judicial functions were recognized as natural issues of the legislative processes. It was not recognized that the executive and judicial functions imply corresponding organizations which become more elaborated and more differentiated from the legislature, the higher the level of evolution of the whole organism.

early members of these two schools have been wholly content with these purely intellectualistic psychologies; feeling was too obtrusive and too obviously influential to be kept wholly in the background; and by the middle of the nineteenth century the revolt of Schopenhauer against the intellectualistic psychology had begun to enforce the claims of conation to be recognized and studied as something other than, and more than, the mere play of ideas.

German Psychology

Kant is generally credited with having given currency to the triple division of mental functions under the heads of cognition, feeling and conation. Bain, in a brief review of his influence [1]), remarks: „It is under the Appetitive Power, Conation, or as we should say the Will, that he (Kant) includes the ordinary emotions, Love, Hatred, etc., thus reproducing, in spite of his more auspicious starting point, the vice attaching to our own philosophers, who proceeded on the two-fold division of mind. In connexion with the Appetitive or Active Faculty, he distinguishes *Affections* and *Passions*. An Affection is a present feeling of pleasure or pain whereby the power of reflection is for the time overcome. It is a sudden coming-on of sensation destructive of the equanimity of the individual. Passion is inclination too strong for the Reason. The passions are *natural* (Liberty, Sexual passion, etc.), or *acquired* (Ambition, Avarice") [2]).

I begin with this instructive citation from Bain, because in this short passage all the principle problems we have to consider are indicated, however vaguely. Love and hatred are the great outstanding examples of organization of the affective life; and, in enquiring into any author's treatment or neglect of our topic, we may always with advantage seek first what he has to say of love and hatred. The terms ‚affection', ‚passion', ‚inclination', have been widely used to point vaguely to the facts we are here concerned with; and especially the recognition by Kant of

[1]) Appendix B to his ‚*Emotions and the Will*' (London, 1865).

[2]) Ribot cites in his *Essai sur les Passions* a passage from Kant's *Anthropologie* as follows: „Kant dans un passage souvent cité établissait entre la passion et l'émotion une distinction nette, précise, positive: L'émotion, dit-il, agit comme une eau qui rompt sa digue, la passion comme un torrent qui creuse de plus en plus profondément son lit. L'émotion est comme une ivresse qu'on cuve; la passion comme une maladie qui résulte d'une constitution vicié ou d'un poison absorbé'".

acquired passions should have put psychologists upon a track of fruitful enquiry; but the cue remained long unused, with the result that, after the lapse of more than a century and a half, psychologists are still fumbling with the problem — What is a *passion* and how is it *acquired*?

The Herbartian Psychology

It was Herbart rather than Kant whose influence determined the main trend of German psychology in the nineteenth century. For him ideas are the sole constituents of mental structure; they exercise whatever activities mind displays, and feeling is merely a mark in consciousness of natural hindrance or furtherance of the activities of the ideas (or presentations) above or below the threshold of consciousness. Such, in brief, is the esssence of Herbart's psychology; yet, somewhat illogically, Herbart recognizes in addition a faculty of desire which includes „wishes, instincts, and every species of longing, inasmuch as they belong neither to the feelings nor to representations" [1]). His discussion of desire and of emotion is very scanty and confused; yet he does hint at some process of organization. Thus: „There are very strong feelings which have grown into the deepest recesses in the foundation of human character (e.g. adherence to one's own people and to the fatherland), with which the most complete equanimity exists so long as nothing of an opposite nature which may disturb them appears. The moment of danger to one's own, or to the fatherland, may arouse emotion, but this emotion is widely different from feeling itself. In the same way a man possesses a strong and lasting feeling of honour without being in a condition of emotion from it". Again he wrote: „The inclinations, or *those lasting mental conditions which are favourable to the rise of certain kinds of desire*, show themselves, more than the so-called instincts, to be different in different people. They are for the most part results of the habit which appears to extend from the faculty of representation into the faculty of desire". (Italics mine). Here, then, is a hint of some acquired and enduring affective organization which cannot properly be described as emotion, desire, passion, nor yet as feeling: for it is obvious that,

[1]) *Lehrbuch zur Psychologie*, Leipzig, 1816. I cite from the American translation made by W. T. Harris from the second edition of 1934.

although Herbart uses the word ‚feeling' to describe such growths, the term is utterly inappropriate. Herbart recognizes also *passions* as another class of enduring acquired factors. He describes passion as ‚rooted desires' and regards them as quasi-pathological and allied to madness. „The most striking, and, next to madness, the saddest spectacle in psychology is furnished by the passions.... They are not inclinations or mental conditions, but are desires, and every desire, without exception, the noblest as well as the worst, may become a passion. It becomes such in so far as it attains dominion to such an extent that moral deliberation is out of the question". Again: „The comparison between insanity and the passions may be carried somewhat further. The most similar to the fixed ideas of the former are the objective passions, or those which aim at definite objects of desire.... Desire for liberty recalls the intractability of most insane people, and the necessity of governing them by force and authority. Love, hate, jealousy, often pass into insanity. Ambition, become insanity, seeks to make itself known by self-sacrifices of an unusual kind, while the desire to govern often erects for itself a throne in an insane asylum". Again we read: „Various excitations of desire for this or that pleasure, or of aversion for this or that discomfort, are capable of a combination, and, as it were, of an accumulated intensity, by which they are changed into a complex force which drives men in a middle direction".

These few passages are all Herbart has to say of „those lasting mental conditions which are favourable to the rise of certain kinds of desires". They should, one might suppose, have sufficed to point to certain individual acquired factors of vast importance in human life (for, as Herbart remarked: „In history the passions play a conspicuous part") and offering therefore a challenging problem to the psychologist. But the challenge was not accepted and not seriously grappled with until nearly a century later; when we find Th. Ribot struggling with the same problem and in almost the same way.

It seems that none of the Herbartians made any progress with the problem indicated by Herbart in the phrase „those lasting mental conditions which are favourable to the rise of certain kinds of desire" and which are „different in different people", are individually acquired and are allied in some sense to habits.

One of them, Nahlowsky, who devoted a volume to *Das Gefühlsleben*, (1862) distinguished somewhat vaguely active and passive affections, and, distinct from them, the passions. Bain states his view succinctly as follows: „As the affection arises out of violent sensations, so does the Passion out of unguarded desires. When any higher feeling is hurt, an affection ensues; when any inclination is thwarted, a passion is excited. Passion is a fixed predominant disposition towards a certain kind of desire that refuses the control of the Reason". The one notable feature here is the introduction of the term ‚disposition' [1]).

Von Hartmann's thorough and detailed review of German psychology of the later nineteenth century (Op. cit) bears out the statement that little or no progress was made with this great problem. I cull the following slight contributions to, or recognitions of, the problem. Erdmann (Psychologische Briefe, 1851) is said to recognize that „Das Gegenteil des Gemütlichen ist die einseitige zur Krankhaften Sucht gewordene Neigung, die als vorübergehende: Affekt, als bleibende: Leidenschaft heisst". And Ulrici is said to have taught that: „Das Streben wird zur Begierde, wenn es behufs der Befriedigung irgend eines Triebes auf die Erlangung, Besitzergreifung, verwendung oder Verwirklichung eines bestimmten Objekts gerichtet ist, wozu die Vorstellung des Objekts Vorbedingung ist. Habituell gewordene Begierde oder dauerndes Streben nach ihrer Befriedigung nennt Ulrici (nicht etwa Laster, sondern) Leidenschaft". Beyond these two mentions of Leidenschaft and the recognition of ‚die Leidenschaft' by Nahlowsky already cited, I find no recognition of the facts or of the problem by any of the forty or more leading German psychologists reviewed up to the year of von Hartmann's essay (1901), nor by von Hartmann himself. My own limited first-hand acquaintance with the German literature of the nineteenth century has discovered nothing relevant in the works of Lotze, Schopenhauer, Wundt, Külpe, Th. Lipps, Brentano, Ziehen, Münsterberg, von Hartmann, Ebbinghaus, G. E. Müller. Brentano, in emphasizing love and hate as fundamental modes

---

[1]) I cite the relevant passage of Nahlowsky's book after von Hartmann (*Die Moderne Psychologie*, 1901). „Die Leidenschaft ist eine fixierte vorwiegende Disposition zu einer bestimmten Art von Begehren, welches der Leitung durch die vermunft widerstrebt, vielmehr selber den Gedankenlauf und die Gefühlsrichtung des Individuums beherrscht".

of activity, means only by these terms appetition and aversion in general.

The Contribution of H. Höffding

Höffding (in his Outlines of Psychology, 1891) who represents a combination of German and British influences, and who still talks, in part, the misty language of Bain and Spencer, makes a distinct, though somewhat confused, contribution to our topic. He writes: „Pain becomes, by association with the idea of its cause, aversion (anger).... With further development, and presupposing the power of entering into the feeling of other individuals, aversion or anger leads to pleasure in the personal cause of the pain having himself to suffer pain, or to pain in his feeling pleasure.... Hence arise *hatred* (desire of revenge) and *envy*, while mere aversion and anger in themselves only urge removal of the object from us or of us from the object. By a similar metamorphosis the feeling of pleasure becomes *delight* and *love*. The idea of that which has an essential connection with the feeling of pleasure blends with it and gives it a certain direction. There arises an involuntary desire to retain and protect that which excites pleasure. Delight in this desire, regarded from the passive contemplative side, is pleasure in dwelling on the object; love denotes the active side, the impulse to action which shall make the object secure, or at any rate secure it *to us*" (p. 235).

Again, in discussing maternal love, Höffding tells us that mother and child are united through instinct, and that maternal instinct becomes actual maternal feeling. „In this connection it is psychologically of great importance that the higher organisms develop more slowly, and the period during which mother and child are united through instinct is consequently prolonged. This gives a firmer basis for the psychological evolution of the feeling. Where the relation between mother and child is permanent, the feeling will attain to a yet higher form, embracing not only the physical, but also the mental, individuality of the child". (p. 249.). In these quaint passages the notable feature is that the essential problem escapes Höffding. „When the relation between mother and child is permanent, the feeling will attain to a yet higher form". But the essential question is — What renders the relation permanent? What is the mental relation which we call love? For it is the mutual love that makes the relation perma-

nent; and to say that when the relation is permanent, the feeling will, in consequence, „attain to a yet higher form", leaves the essential problem untouched.

On a later page (282) Höffding returns to the same topic. „This opposition between the effect of repetition and of accomodation on the passive and on the active sides of feeling, leads us to recall the opposition which the older psychology (especially since Kant's admirable exposition in the *Anthropologie*).... postulated between emotion (Affekt) and passion (Leidenschaft). By emotion is understood a sudden boiling up of feeling, which for a time overwhelms the mind and prevents the free and natural combination of the cognitive elements. Passion (sentiment, disposition), on the other hand, is the movement of feeling become second nature, deeply rooted by custom. In passion the impulsive element of feeling is especially prominent, and it stands consequently intermediate between feeling and will. What the emotion, with powerful expansive movement, is in one single instant, the passion is in the depths of the mind as a collected sum of force, which lies ready for employment. But quiet reflection is not therefore excluded from passion; on the contrary, the latter finds its expression in a thought which controls all the ideas.... Feeling begins as emotion, and passes — if it finds sufficient food — into passion. Anger and sorrow are emotions, revengefulness and melancholy are passions. The deepest and most central current in human nature is the ruling passion, first determined and set going by the inherited disposition, and nourished, developed, and refined by all stir of feeling and by experiences. Repetition has a different effect upon emotion and upon passion; it weakens the one and feeds the other. This is connected with the fact that passion is of a more active nature, and more closely linked with definite and distinct ideas than is emotion. As emotion may prepare the way for passion, so may the latter take vent as emotion, although it may also gratify itself in a quiet and duly considered way. By the way in which it finds satisfaction, passion may excite emotions of a different class. Thus the love of a country will in a time of danger arouse the warlike spirit and love of battle.... Everything which is really to have power over us, must manifest itself as emotion or passion" (p. 283).

The foregoing citations embody all that Höffding has to say

on our topic. I have cited them at some length because they show how the problem stood at the end of the nineteenth century: all emotions and passions are classed as feelings, (the feeling of pleasure *becomes* love) but the so-called *passions* are no longer treated as rare and semi-pathological phenomena, to be left to the mad-doctors, but rather are recognized as dynamic factors of the first importance for normal life. This last represents a great step [1]). It is interesting and significant that Höffding seems to have achieved this step, in part at least, by going back to Kant's distinction between Affections (emotions) and acquired passions (of which ambition is cited as typical); a distinction virtually lost sight of in the interval of a century or more.

Though Höffding wrote in German, his few but highly significant remarks on passions seem to have had but little effect on subsequent German psychology. The fact may be illustrated by reference to Professor Karl Bühler's *Die Geistige Entwicklung des Kindes* (4th. Ed. 1824). This book, which is by no means confined to the study of intellectual development, but, rather is much concerned, in spots, with the insoluble problem of the development of purposive modes of behaviour out of instinctive reactions conceived as chain-reflexes, completely ignores the more important half of the processes of child development, namely, the processes of character-formation, the processes of organisation of tendencies; I can discover no trace of recognition of this vast realm of facts, which as we have seen, Kant, Herbart, Nahlowsky, Erdman, Ulrici and Höffding had obscurely indicated by the use of the word ‚passion' (Leidenschaft).

In a recent volume Professor Narziss Ach has given a careful resumé of recent experimental studies of volition, many of which come from his own laboratory [2]). His survey shows that great progress has been made since he wrote his earlier volume on the same topic [3]). At that earlier date (1910) the experimental approach had yielded little more than the evidence that the explanatory principles of the old idea-psychology had left out

---

[1]) My citations are from the English Edition of 1904. I have not had the opportunity to examine the original edition of 1891. As we shall see, it was just about the turn of the century that French and British authors were beginning to get new insight into this problem; and it remains a question whether the advance represented by Höffding was wholly his own achievement.

[2]) *Analyse des Willens*, Berlin, 1935.

[3]) Über den Willensakt und das Temperament. Leipsic. 1910.

the essential dynamic factor of all mental process, the conative factor; at that date beginning vaguely to be recognized by the psychologists of the laboratory under the names *determining tendency*, motor-set, *Aufgabe* etc. In most of the experimental attempts up to that date the essential conative factors had eluded the experimental procedures, owing to the traditional blindness to their influence and role.

Ach's new volume shows abundantly that, under his leadership, the experimental methods have overcome this initial defect and are really throwing light upon the working of the conative factor. But it reveals little attempt to illuminate, and indeed little recognition of ,the vast complexity of organization which underlies the higher forms of conation properly called volitional.

The Contribution of Dr. William Stern

Dr. William Stern has recently published a large volume [1]) which resumes the results of the labours of German psychologists, incorporating all that is best of them in his system of personalistic psychology. It is therefore a matter of considerable interest to enquire how far he has recognized and dealt with the probiem of affective organization. We note at once a great advance in method. Whereas the psychologists of the nineteenth century for the most part attempted to set forth the facts of our mental life in terms or ideas and feelings, or, if they were voluntarists, adding acts of will (very abstractly conceived), or perhaps impulses (all of which, with Schopenhauer, von Hartmann and their followers, were described as unconscious activities) Stern begins his discussion of the volitional or conative side of our mental life by postulating or inferring, not merely conative impulses (*Triebe*), but also conative dispositions [2]). *Triebe* are described not merely as impulses, but also as *Richtungsdispositionen*, „Trieb ist eine *Disposition*, d.h. eine potentielle Dauer-beschaffenheit. Wir können die Person überhaupt nicht anders denken, als in Besitz solcher Gerichtetheiten auf die Erfüllung ihrer Urziele; und diese Gerichtetheiten müssen in der Form potentieller Energien auch dann

[1]) *Allgemeine Psychologie*, The Hague, 1935.

[2]) Der menschliche Wille, seine Merkmale, Stufen, Ablaufsweisen, sowie die, ihn tragenden, personalen Dispositionen bilden das eigentliche Kernstück dieses Hauptteils". (S. 512). The term *Willens-dispositionen* is also used, and seems to be almost exactly equivalent to the English term *conative dispositions*.

als existent angesetzt werden, wenn sie in keiner gengenwärtigen Handlung hervortreten.... Voraussetzung für diese Annahme latenter Triebe ist freilich, dass im gegenbenen Falle, d.h. wenn die äusseren und inneren Bedingungen vorliegen, der Trieb aktiviert werden kann, dass er ‚erwacht', ‚nach Erfüllung drängt' .... Jeder Trieb is eine solche Richtungsdisposition; demnach muss es im Menschen viele Triebe geben, da es viele immanente Richtungen der personalen Lebens-betätigung gibt". (S. 521). Some of these innate conative dispositions man has in common with the animals, others are peculiar to the human species. The energy which, on activation of any such disposition, is liberated within it is not confined to the production of some one stereotyped form of activity; rather it may work in varied fashion, taking part in sustaining high-level mental activities.

„Entwickelungspsychologisch betrachtet besteht also der Unterschied zwischen niederen und höheren Organismen bezw. Stufen nicht darin, dass auf dem höheren Niveau an die Stelle der Triebe andere Strebungsweisen treten, die mit Trieben überhaupt nichts zu tun hätten — sondern darin, dass auf den niederen Stufen die Triebe hauptsächlich vitaler Natur sind und sich vornehmlich in specifischen Triebhandlungen auswirken, während auf den höheren Stufen vitale wie humane Triebe zu mitwirkenden Faktoren in komplexeren Handlungsformen werden". (S. 524).

Here then is something, the innate disposition, that may become organized within more complex systems. Höffding and his predecessors, who tried to account for the facts of enduring passion, sentiment or inclination in terms of feeling alone, describing emotion as complex feeling, and love (or other passion) as merely still more complex feeling (c. especially H. Spencer), all these were labouring to make bricks, not only without straw, but also without clay. A feeling is a fleeting aspect of experience; and it is impossible that a highly complex and enduring structure can be built up of feelings (even if they be called unconscious).

It is true that some of the German psychologists, accepting the view of the nervous system as made up of reflex arcs, and neural activity as essentially sequences and conjunctions of mechanical reflexes, attempted, like Ziehen, to represent the reflex arc as the unit of all mental structure. But every attempt to build out of mechanical reflex arcs a structure which will

behave with a self-regulating autonomous far-sighted goal-seeking activity (as does human character) is a hopeless one. Purposive activity cannot issue from a purely mechanical structure no matter how complex it may be. Stern, therefore, is right to postulate, as the unit of structure, a disposition which functions in a teleological fashion of however lowly a kind, rather than any mechanical unit. It is pointless to object that we cannot explain such rudimentary purposive activity as Stern ascribes to the *Richtungsdispositionen* which he calls *Triebe*. In every science certain ultimates have to be postulated; it may well be that here is one of the ultimates of biological science.

Stern's frank postulation of units of structure of teleological function gives him, then, material well-adapted for service in any attempt to account for the higher forms of purposive activity and for affective organization in general.

But in certain other respects his general opening is less favourable to the solution of the problem of affective organization. It is significant that his section on *Streben, Handeln, Leisten* appears in the last part of his large volume of more than 800 pages; that he has completed his sections on all the intellectual organization and functioning before grappling with the problems of conation.

Still more unfavourably significant is the fact that he uses (in part) the words *Charakter* and *Charakterologie* in the traditional German meaning, rather than in the sense of the English word *character*. He identifies *Charakterologie* with *differentielle Psychologie* and with *Typenlehre* (or very nearly so). Thus *Charakter* is used in the meaning of all that makes the individual unique [1]; rather than with the meaning of the English word ‚character', namely, the organized system of tendencies to action and emotion and feeling which expresses itself at its highest in volition (in the fullest sense of that word). In the English sense of the words,

---

[1] J. S. Mill is generally credited with the proposal to create a science of Character under the name *Ethology*. A careful reading of the relevant chapter in his *Principles of Logic* shows that what Mill had in view was just what Stern and other modern German authors mean by *Charakterologie*.

The late lamented Hans Prinzhorn, who commanded the literature of *Charakterologie* more fully than any other, wrote in his essay *Charakter und Schicksal* (reprinted in the volume *Um die Persönlichkeit*, Heidelberg, 1927): „Wir meinen, wenn wir von Charakter sprechen, jene individuell unterscheidende seelische Eigenart vorwiegend des Menschen, die ihn von der Geburt bis zum Tode wesentlich kennzeichnet als 'diesen Menschen'".

volition is character in action; and character is that part of the developed personality from which volition issues. The English word, in its familiar traditional meaning, points directly to our problem, the problem of affective organization. The German word *Charakter* does not render this great service. And it would seem that there is no German word which will adequately translate the English word [1]).

In spite of these initial disadvantages, Stern does make some recognition of affective organization or structure. Such recognition seems to be implied by the following terms: *Willens dispositionen, Willenshaltungen, Gesinnungen, chronische Zielbestimmtheiten, chronische Gemüthsverfassungen und Dispositionen, Neigungen, Interessen, Leidenschaften,* and *Bedürfnisse. Willensdispositionen* fall into two classes, namely, *Willenshaltungen* and *Gesinnungen.* In the article mentioned in the foregoing footnote we find: „Setting-of-will (Willenshaltung) is that relatively permanent state of a person which disposes him towards acts of will of a definite kind".

Under the head of *Willenshaltung* we read: „die Genomotive weisen nun über sich selbst hinaus. Sie entspringen aus Bedürfnissen; diese aber sind ja nicht nur in jenen Augenblicken da, in denen sie sich in Willensakt umzetzen, sondern sie führen vorher und nacher eine dispositionelle Existenz. In ihnen lebt eine chronische Gerichtetheit und Gerüstetheit der Person, eine Bereitschaft und eine Kraftgeladenheit, ohne welche der acute

---

[1]) It is true that in German literature the word *Charakter* has sometimes been used in a sense well-nigh equivalent to the English word; notably, when Goethe wrote: „Es bildet ein Talent sich in der Stille, Sich ein Charakter in dem Strom der Welt". Cp. my article, *The Meaning of the Words Character and Personality*, in Vol. I of the Journal of that name. The difference between the English meaning of the words and its meaning in German scientific writings may be illustrated in the following way. Peculiarities of intellectual content and organization, of knowledge and of talent, fall to be studied under the head of *Charakterologie.* But they form no part of character in the English sense. Two men might be very closely alike in respect of knowledge, talents and intellectual organization in general; but, in spite of this, they might be very unlike in respect of character. The one might be of weak ill-organized character, the other of firmly-knit well-organized and therefore strong character; or, though both might be of strong character, their enduring 'values" or valuations might be very different; one hating or disliking what the other loves or likes. Prinzhorn's sentence cited above clearly implies that *Charakter* is present in the infant; whereas *character* is something which no infant possesses; since *character* is formed only in the course of individual development, forms itself only 'in dem Strom der Welt', and, one might add, only, in the fullest sense, through self-conscious effort. It is true also that Stern, in his section *Zur Theorie des Charakters*, treats of character in the English sense. This section has appeared in English translation in *Character and Personality, Vol. III* No. 4, 1935. My citations in English are from this article.

Durchbruch zum Willensruck nicht möglich wäre. Damit gewinnen wir eine Voraussetzung der Willenshandlungen, die tiefer in der Totalperson verankert ist, als die Motivik der Einzeltaten. Wir nennen sie die ‚Willenshaltung'; es ist derjenige, *relative chronische, Zustand einer Person, der zu Willensnandlungen bestimmter Art disponiert*". (S. 598, italics mine). Stern writes also of „die Erzeugung einer chronischen Willens-Haltung durch eine akute Willens-Handlung". But the nature and genesis of a setting -of-will remain obscure. Stern tells us clearly what its function is, but little else.

Gesinnung is a word for which I can find no English equivalent; ‚intention' is perhaps nearest. It would seem to mean something like ‚rationalized' and self-consciously explained resolutions. *Gesinnung* is said to be „das chronisch gewordene Phänomotive", to be „Bewusstseinz-Spiegelung und Darstellung einer dispositioneller Willensbeschaffenheit". And in the English article we find: „by ‚intentionality' (Gesinnung) is meant the permanent inner state of intention" [1]).

Yet, although Stern seems to identify *Charakterologie* with *differentielle Psychologie*, when we come to his paragraph *Zur Theorie des Charakters*, we find the word used more nearly in the English sense. The word *Charakter* „drückt eine Beschaffenheit aus, die der Person in ihrer *Totalität* zukommt, und betrachtet diese Totalität nur unter einem bestimmten Richtpunkt, nämlich der Eingestellheit auf Willenshandlungen.... Darum gehört es zum Wesen des einheitlichen Charakters, dass er eine Fülle von Willenshaltungen in sich schliesst" [2]). (S. 604). „Charakter ist die Gesamtbeschaffenheit des Menschen, sofern sie Bereitschafft und Eingestelltheit zu Willenshandlungen ist [3])" (S. 609).

Stern goes on to classify traits and types of character, and here he writes of those traits which he calls permanent goals of the

---

[1]) I remark that *Gesinnung* is the word chosen by the German translator of my *Social Psychology* as aequivalent to my *sentiment*. This would seem to be very wide of the mark, though perhaps the best word available.

[2]) „The concept character has meaning only as a totality concept. It designates the make-up that the person possesses in his totality, and considers the totality from one definite standpoint only, that is, the predisposition to acts of *Will*.... It is therefore essential that this unitary character contain within itself abundant settings-of-will, which appear both simultaneously and in the successive stages of life".

[3]) „Character is the total make-up of the individual in terms of readiness and predisposition for acts of will".

will (*chronische Zielbestimmtheiten*), and which he illustrates by naming *Erwerbsinn, Familiensinn, Frömmigheit, Wahrheitsliebe.* And we are led to suppose that the complex unity which is character is an organized system of traits or qualities. The character-trait, defined as „the readiness for directed dynamic acts of will of a definite kind", is spoken of as the raw material out of which the *Strukturbild* must be constructed. In all this part of his discussion he seems to perpetuate the old confusion between abstract qualities of persons, such as piety, or courage, on the one hand, and, on the other hand, such concrete sources of motivation and action as particular loves and hates; a confusion which runs throughout the history of our topic. In general, his account of the structure of *Charakter*, of the processes of formation of these factors, or constituents dispositions, and the organization of them within the total system of the constituent dispositions, and of its role in determining the course of action, feeling, emotion, and thinking is somewhat vague, and lacking in concreteness.

But, since the Triebe (which as we have seen are conative dispositions) are represented as the fundamental springs of all conation, and character as the source of the highly organized forms of conation called ‚will'; it is fair to say that Stern regards character as the product of a long-continued process of growth and organization through which the *Triebe* (or innate conative dispositions) are built up into a more or less integrated and harmonious system which plays a great part in all volition; and this organization is largely achieved by self-conscious striving.

The sixth section is devoted to *Gefühlspsychologie.* Stern throws over entirely the atomistic treatment of feeling and emotion, so prevalent in the nineteenth century, and insists throughout on the *Ganzheit* point of view. In this and other ways his exposition represents a great advance. But he makes little attempt to use the conception of dispositions as a cue to understanding the organization which underlies the complex forms of feeling and emotion. If we apply to his account our test-question — How are love and hate treated? We find that both are described as feelings, quite in nineteenth-century fashion; although there is some vague recognition that they are far more than feelings, e.g. in one passage, love is classed as an inclination (*Neigung*).

One may well ask whether Stern has not treated the same facts

twice over under the two distinct headings of volition and feeling, under *Willenshaltungen, Willensdispositionen* and *Gesinnungen*, on the one hand, and, on the other hand, *Gefühlsdispositionen*, chronische *Gemutsverfassungen und Dispositionen;* without making clear how he conceives the relations between these two classes of dispositions. The two classes are discussed in distinct sections of the book, namely, the *fünfter Hauptteil* devoted to *Streben, Handeln, Leisten* and the *Sechster Haupteil* devoted to *Gefühl*, respectively.

It is also to be remarked that Stern's treatment of these topics (in both fifth and sixth sections) remains (like that of his German predecessors) unduly abstract, lacking in description and discussion of concrete forms of affective dispositions of both the kinds he distinguishes, those of will and those of feeling; a defect which can only be remedied by a much more thoroughgoing attempt to distinguish and define the *Triebe* which characterize the species *Homo Sapiens*; a task which Stern nowhere attempts.

In the section on *Gefühlspsychologie* occurs a brief paragraph in which Stern mentions „chronische Gemütsverfassungen und Dispositionen, die zu den konstitutiven Zügen jedes Persönlichkeitbildes gehören". (S. 747). And the brief last chapter of the book is devoted to *Gefühlsdispositionen*. These are said to be of two kinds, *Neigungen* and *Interessen*. „Eine Neigung ist gerichtet auf ein konkretes fertiges Objekt, so wie es ist, ein Interesse auf die Annäherung an ein Ziel, das noch unbestimmt ist". Further: „Eine besondere Bezeichnung haben wir für die stärksten Grade der Richtungsdispositionen des Gefühlslebens: Leidenschaften. Sowohl Neigungen wie Interessen können sich zu Leidenschaften steigern". (S. 794). The relations of these *feeling-dispositions* to the *will-dispositions, settings-of-will* and *intentionalities*, (*Willenshaltungen* and *Gesinnungen*) remain entirely obscure. On the whole Stern presents a great advance upon his German predecessors, rendered possible chiefly by the postulation of dispositions or *Richtungsdispositionen*.

Three Recent Developments of German Psychology

Three recent developments of German psychology, all of which stand somewhat apart from and independent of the main stream of tradition, require brief separate consideration.

The School of Gestalt

The *Gestalt* psychology claims to be, not merely a theory of perceptual processes, but also a system of psychology; and Professor K. Koffka has recently made the first attempt to present the system as such in one large volume [1]). It is largely concerned with organization of the structure of the mind and with dynamic explanation of activity in terms of forces and energies. But there is little attempt to deal with our topic, affective organization. Certain dynamic factors are recognized obscurely under the head of needs [2]). These needs are said to be constituents of the ego, and of the self, which is the core of the ego. And a vague topographical grouping of needs within the ego is indicated. But Koffka denies himself the material for any affective organization, in repudiating the conception of conative dispositions in the sense of Stern's *angeborene Richtungsdisposition;* and in general makes any account of character-formation impossible by repudiating teleology and adopting crypto- or quasi-mechanistic principles of dynamic interpretation.

Professor W. Köhler has given only slight attention to the problems of the affective life; but what little he has written on the subject seems promising. But he also handicaps himself severely by committing himself to physico-chemical explanations of all mental processes.

Professor Kurt Lewin starts out which a similar handicap or self-denying ordinance, in setting the goal of explanation of all processes in Gallileian terms. Nevertheless, he does achieve a somewhat abstract and vague account of dynamic systems of which *needs* are the leading features; systems which are grouped together to form the ego. Needs are spoken of as reservoirs of energy; but are not further defined or elucidated. The systems are said to be segregated in various degrees, to communicate with one another with various degrees of freedom, to have walls of various degrees of thickness, to have different degrees of rigidity, to be arranged in more central and more peripheral

---

[1]) *Principles of Gestalt Psychology*, London and New York, 1935.

[2]) This word seems to be an unfortunate translation of the German word *Bedürfnisse*. Stern writes of *Bedürfnisse* in a way which makes it equivalent to *desire*; and it would seem that *desire* is more nearly its English equivalent. Perhaps the expression 'felt need' would suffice as translation of it.

regions, and to be stratified [1]). The word ‚character' hardly occurs and is not used in the English sense in the writings of this school.

The Contribution of Ludwig Klages

Dr. Ludwig Klages has written much on *Charakterologie* and is regarded, by his admirers, as having founded a distinct science of that name, by the publication in the year 1910 of his *Prinzipien der Charakterologie*, republished in an enlarged form as *Grundlagen der Charakterkunde*. Although this latter volume has appeared in an English translation [2]), all Klages' writing remains extremely difficult for the non-German reader and even, as Prinzhorn (his chief disciple and enthusiastic expositor of his views) confesses, to his country-men.

A chief concern of Klages, who acknowledges Nietzsche as his only teacher, is certainly the organization of the affective life. Prinzhorn defines the aim and scope of his *reine Charakterologie* as follows: It seeks in respect of each individual „nach den wahren eigentlichen Motiven und nach seinem Wesen.... Die Deutung entfernt sich von dem faktischen Gegebenen, dringt in eine tiefere Seinsschicht und trachtet danach, in dieser ein gültiges Abbild zu entwerfen. Vorausgesetzt ist dabei, dass es so etwas wie eine tiefere Seinsschicht überhaupt gebe, dass sie ihre bestimmte Struktur habe und dass wir diese erkennen und schildern können. Bleiben wir mit unserer Schilderung in dieser Schicht der Persönlichkeit, die wir aus dem äusseren Wirkungszusammenhang isoliert oder konsequent auf ihren Stoff, ihre Eigenart, ihr Gefüge geprüft haben — so treiben wir reine Charakterologie" (S. 85) [3]). Prinzhorn asserts that the aim is to pierce „durch dis Fassade der sichtbaren Worte und Taten auf die zugrundeliegenden Gesinnungen, Gefühle, Wünsche", in the interests of a deeper interpretation of the individual person.

Prinzhorn affirms that Nietzsche was the first to make such „Versuch, in das zutiefst Wirkende im Menschen einzudringen,

---

[1]) Cp. My series of four articles on *Dynamics of the Gestalt Psychology*, in *Character and Personality*, vols. IV and V, for fuller discussion of the views of the *Gestalt* school.

[2]) *The Science of Character*, London. 1929.

[3]) My citation is from Prinzhorns's essay *Die Begründung einer reinen Charakterologie durch Ludwig Klages*, republished in his volume *Um die Persönlichkeit*, Heidelberg, 1927.

des ‚Wesens' sich zu bemächtigen. Dies geschieht erst durch Nietzsche, und zwar so radikal, dass Klages zweifellos Recht hat, in ihm einen Wendepunkt der Menschheitsentwicklung von noch kaum schätzbarer umwälzender Bedeutung zu erblicken. Mit ihm nähmlich setzt sich ein neuer Grundsatz durch, der vorher kaum einmal angeklungen war: Man muss hinter den Masken der Worte und Handlungen die wahren Motive erst suchen. Man muss die Menschen entlarven, nichts für das nehmen, als was es sich zeigt und ausgibt, sondern stets zurückschliessen von der Meinung *auf den Trieb* der sich darin äussert.... Er [Nietzsche] schuf jene Betrachtungsweise, die eine innere Schicht der Persönlichkeit isoliert aus dem Sachzusammenhang eines Milieus, und die nach der Gesinnung, nach der Triebwurzel, nach dem vitalen Sinn der Handlungen fragt". (S. 86).

Four strata of personality are distinguished and *Charakter* is said to be located chiefly in the third of these. The second stratum is that „die wir die Schicht der latenten Fähigkeiten oder des Wissens und Könnens benennen wollen. Durch diese dringen wir beim typischen Berufsmenschen ohne besonderen menschlichen Anlass selten hindurch bis in die dritte Schicht, die des persönlichen Seins. Hier stehen wir dem Privatmenschen mit seinen Anlagen, Eigenschaften, Gefühlen, Wünschen, Impulsen, Trieben gegenüber, hier werden wir seiner Sonderart inne, seines Temperaments, seines Charakters, seiner Marotten". (S. 91).

The aim of Klages' *Charakterologie* is thus pretty clearly defined. The filling in of the scheme it is more difficult concisely to characterize. One great difficulty arises from the peculiar dualistic theory of Klages which sharply distinguishes soul (or life) from intellect (or Spirit) (*Seele* from Geist) [1]) and regards these two as in perpetual conflict or opposition. The *Triebe* are wholly of the soul (or Life), while the will is a function of *Geist*, and hence in no sense a development through organization from the life of instinct (or Triebe).

The importance of *Die Triebe* is however fully recognized as *schöfferischer Urgrund* of Man; and they are represented as undergoing some degree of organization in the form of *Triebfedern*

[1]) *Der Geist* is described as *Widersacher der Seele* and we are told „der Geist, die an Stärke dem Leben vielleicht überlegene Macht, die Bewusstsein, Dingwelt, Willen, Ichheit in sich begreift, macht den Menschen erst zum Menschen und eröffnet ihm alle Möglichkeiten die dem Tiere verschlossen sind" (S. 102).

and *Interessen*. The approach is by way of study of the *expressions* especially handwriting: „Ausgangspunkt ist die Formel für die Erscheiningsweise des Seelischen in Körpervorgängen: jede Körperbewegung verwirklicht (in ihrem Ausdrucksanteil) das Antriebserlebnis des in ihr sich ausdrückenden Gefühls". (S. 105).

„*Triebfedern* (a word very difficult to translate, it is said to be merely „eine Verdeutschung des Wortes Interesse") entsprechen eben bestimmten Gefühlsanlagen (in denen Man immerhin nach zugrunde liegenden Trieben forschen mag) und sind Richtungseigenschaften, die ihren Träger zwingen, so und nicht anders zu handeln". And they are said to be of several classes, and to form a system, within which various conflicts and cooperations occur.

I have made these citations from Prinzhorn's exposition, because, although I have read Klages book on *Charakter* three times, I have failed to understand just what he means by *Triebfedern*, how they are formed and what is the nature of the system in which they are said to be organized. Non does the elaborate table under the heading of *System of Driving Forces* [1]) in Klages' book give much help. It is clear that a *Triebfeder* is conceived as something more than a *Trieb*, something of a higher level of organization into which the Trieb enters as the energizing constituent. In the table we find such terms as thirst for truth, love of justice, sense of duty, love of home, tendency to adoration, ambition, vanity, motherliness, benevolence, faithfulness, gentleness, instability, lack of restraint, intolerance, prudence, envy, obstinacy, lack of sympathy and steadfastness, carelessness, rashness, wantonness, impatience, coldness, moderation. These are a fair sample of the large array of terms; and they suffice to show that Klages (like Stern in this respect) perpetuates the ancient and fatal confusion between on the one hand abstract qualities of temperament, character and conduct and, on the other hand, the concrete driving forces of personality; a confusion most vividly demonstrated by the inclusion in the list of *driving forces* of various qualities described by the expression *lack of this or that.*

Surely, although such abstract qualities as gentleness, or rashness or prudence may, in a very popular and vague way, be

---

[1]) *The Science of Character. Driving Forces* is the expression chosen to translate the word *Triebfedern*; but it would seem rather to be the equivalent of *Triebe.*

regarded as driving forces, the *lack of* similar abstract qualities cannot by any extreme of looseness of language be validly described as driving forces, or in any way as the positive sources or springs of action, nor as positive constituents of the structure of character.

It is impossible that the concrete structure of character should be built up from abstract entities; its qualities or properties. To attempt to describe it in this way is comparable to describing the structure of a house as composed of the abstract qualities we discern in it, shapeliness, grace, durability, hardness, manifoldness of detail, simplicity, gloominess, etc. The completest possible list of such abstract qualities will not describe the structure of the house.

In the table the qualities and tendencies of this confused list are classified in six groups. There are three principal groups, the spiritual, the personal, and the sensuous *Triebfedern*; and each of these is further divided into two groups of which one is said to be characterized by self-devotion and the other by self-assertion. Without stopping to criticize this classification, one may remark that no classification of the constituents of character, no matter how valid, can serve as an account of its structure and organization, or as more than a perhaps useful preliminary for such an account.

The main feature which stands out clearly is that for Klages, as for Nietzsche, the fundamental dynamic or energizing factors in all mental life are the *Triebe*, the instinctive impulses, urges or drives. We read: „Even the organ of thought, whose mainsprings are reasons and causes, proves to be conditioned by its urges (Triebe)". (p. 32). Again: „The urges are conditions and substrata of personal character, and especially of its nature and in so far are already implicit in the driving forces. Urges in themselves belong to the character only of a vital entity [e.g. any animal] and not of a personal ego, that is of a vital entity *plus* spirit; but it is true that the personal ego would have ceased to exist if it were perfectly detached from its vital substratum. Therefore we shall consider it an important task to pursue the nature of personality into the stratum of the urges". (p. 93).

As throwing some light on the to me obscure question of the relation of *Triebe* to *Triebfedern*, I cite the following: „In feelings peculiar to man, driving forces (Triebfedern) are observed; in the

feelings of animals, urges (Triebe). Urges are vital causes of movement, and vital movement (as opposed to purely mechanical movement) is directed upon a goal". (p. 172). We are told that the personal driving forces may also be called *dispositions of feeling*; and certain qualities of character are rightly said to be architectural qualities, those such as harmoniousness, firmness, ripeness and immaturity. While other traits „which, although deceptively similar to the genuine qualities of character.... are not properties of character, but permanent relations of the manifestations of character to the demands, claims, and rules of a human sphere of activity". Examples given are probity, loyalty, trustworthiness.

Perhaps the nearest to defining *Triebfedern* are the following passages: „If the driving forces (Triebfedern) are in fact what we have taken them to be, namely, partly causes of will and partly dispositions of feeling, then will is connected by virtue of them with the impulses in such a way that, under certain conditions... each driving impulse (Trieb) should be capable of occasioning, through the stratum of driving forces (*Triebfedern*), an act of will". And „We find no driving force (whether envy, jealousy, business interest, thirst for knowledge, or conscience) which could not make itself felt by means of a feeling of lack, thus leading back to a vital substratum, although at the moment we may be unable to point to animal impulses corresponding to it". (p. 198).

„Driving force [*Triebfeder*] is German for ‚interest'. Characterologically both denote the same thing. On the other hand, interests (driving forces) [*Triebfedern*] are not identical with urges [*Triebe*]: the *Triebfeder* of ambition may be called a certain direction of a man's interests, but the sexual urge of a bull cannot be called his sexual interest .... By a driving force [*Triebfeder*] we mean the inner cause of a Striving in general and of an event of willing in particular.... each driving force [*Triebfeder*] is the permanent condition governing a *direction* of a man's volition". (p. 85). „Every driving force [*Triebfeder*] or directive quality is at the same time a (specific) disposition of feeling, and every disposition of feeling is a driving force [*Triebfeder*] or directive quality". (p. 87). „It is the personal driving forces [*Triebfedern*] which primarily urge us to act, while the so called moral *Triebfedern* urge us chiefly to refrain, both of course in relation to our other inclinations" (p. 88).

The following passage seems of special interest because in it Klages propounds a principle which I have made a leading clue to the elucidation of the affective life and organization [1]). „We can distinguish in every feeling, even in that of indifference, the aspect of impulse from the tone of mood. The feeling of fear is, besides a mental disposition which cannot further be described, an impulse to flight, whence it is immediately obvious why it can act as a driving force, and can in men be the basis of such resolutions as tend to the evasion of occasions which arouse fear. The strength of fear can pass through many degrees, from slight apprehensiveness to terror, but its direction is always the same, towards flight, and this property goes with the peculiar shade of mood which is the feeling of fear. Thus that which from one side appears as the peculiar nature of the feeling appears in its relation to will as a special driving force, and we say the same thing in two ways when we speak of a system of driving forces and of the nature of the personal dispositions of feelings" (p. 88).

I cannot but think that Klages, if he had followed up this insight, and had applied the principle in a thorough-going fashion, would have achieved a less confused view of the affective life and more insight into the structure of character and the processes through which it becomes gradually organized and integrated. Yet his peculiar doctrine of volition as a function of *Geist* (a metaphysical universal principal outside the realm of space and time and entirely distinct from *Seele*, reminiscent of Aristotle's *nous*) would seem to be an insuperable bar to any such consistent account of the structure and functioning of character.

I will point to only one more important point of Klages' teaching which seems to me true and important, and achieved in spite of, and inconsistently with, his peculiar metaphysics of *Geist* and *Wille*; namely, his insistence upon the role of self-assertion in all volition. „We saw that will is rooted in the Ego, and with the help of volition the Ego operates upon the organism like an impulse .... If accordingly we set up the equation impulse for self-preservation = impulse for self-assertion = immediate foundation of will-to-power or will-to-success or, in short, of will, then we have stated that, without the participation of the impulse after self-assertion, events of willing cannot take place" (p. 209).

---

[1]) In my *Social Psychology* (1908).

Here Klages seems to state an important truth; but distorts it by the implication that the Ego is a function of the supernatural Geist.

That volition in the full sense is a function of the whole integrated personality, within which we validly distinguish two aspects, intellect and character respectively, is, I hold, true doctrine; and the Ego is the crown and keystone of the architectural unity of personality by means of which alone its integration is completed. But I cannot see that Klages has shown us sufficient grounds for refusing to believe that we may discern in our animal ancestry rudiments from which both ego and intellect may have been evolved by processes not radically different from those of mental evolution of the lower levels.

The Contribution of Psycho-Analysis

Professor Sigmund Freud and the members of his school and of derivative schools have been largely concerned with the problem of affective organization, approaching it obliquely from the therapeutic point of view; and they have made positive contributions towards our understanding of it.

Freud's almost exclusive concentration upon the working of the energy of the sex instinct (under the designation *libido*), due to the large role of sex in the genesis of many neurotic disorders, has been a seriously distorting and narrowing influence. In the early days when he held to the traumatic theory of neuroses, he wrote of *Besetzung* of various objects with *libido*; as though energy liberated from the sex instinct or *Trieb* became attached in considerable quantities to ideas of various objects, which were said to be objects on or about which the *libido* was fixated or dammed up. Such 'fixated' or dammed-up energy could work subconsciously to determine dreams, distortions of judgment, errors of belief, and symptoms of many kinds; and it could be set free or led to escape from its confinement, such escape being the healing process of catharsis or *Ab-reaction*. All this was described in highly figurative and vague language; and Freud, although the conception of the sex-instinct as an enduring disposition was implicit in what he wrote, and though he has used the expression *Gefühlsbetonter Complex*, had never exploited that conception in the way which would lead to an account of the structure of character as a system of dispositions.

Dr. C. G. Jung has been at more pains to develop and clarify the conception of the complex; first, more particularly in his *Psychologie der Dementia Praecox* (1907), and later again in his *Ueber die Energetik der Seele* (Leipzig, 1928). Yet in the main he has been concerned with the dynamic effects of complexes rather than with the attempt to ascertain their constitution and genesis.

Jung begins the latter work by justifying the conception of psychical energy and the attempt to estimate it quantitatively; asserting that we have the grounds for such estimation in our *subjective Wertsystem*. But conscious valuations, he says, can throw no light on the Unconscious, which however can distort the former. Hence we must have some objective methods for revealing the energetics of the Unconscious. Jung then refers to his well-known association-method for the discovery of complexes, saying: „Ich habe.... gezeigt dass es gewisse Gruppierungen von psychischen Elementen um gefühlsbetonte Inhalte gibt, die man as *Komplexe* bezeichnet. Der gefühlsbetonte Inhalt, der Komplex, besteht aus einem Kern-element, und einer grossen Anzahl sekundär Konstellierter Assoziationen. Das Kernelement besteht aus zwei Komponenten, erstens aus einer Bedingung, die durch die Erfahrung gegeben ist, also einem Erlebnis, welches kausal mit der Umgebung verknüpft ist, zweitens aus einer dem individuellen Charakter immanenter Bedingung dispositioneller Natur. Das Kernelement is ausgezeichnet durch den sog. Gefühlston, die affektive Betonung. Diese Betonung ist, energetisch ausgedrückt, eine *Wertquantität*". (S. 20)). He goes on to say that the nucleus of the complex may be conscious or unconscious. In the case of the complex of the latter type we need a special explanation, because *der energetische Wert*, being a resident power of attraction, should automatically bring the complex into consciousness. The simplest explanation of the remaining unconscious is given ,Jung says, by Freud's theory of repression [1]). This, he considers, explains many cases; but is not applicable to others, which remain in the Unconscious because they have acquired no connexions with the contents of consciousness and are therefore *bewusstseinsunfähig* — not *höf-fähig* as it were.

The nuclear element creates automatically a complex in the

[1]) I have pointed out in my *Psychoanalysis & Social Psychology* (London, 1936) that Freud offers us five different theories of the process of repression and that no one of the five is acceptable.

degree that it is feeling-toned or possesses energetic value: it has a constellating power corresponding to its energetic value. From the latter results a specific constellation of psychical contents. Therefrom arises the complex, which, therefore, is a constellation of psychical contents dynamically conditioned by the energetic value. Thus he arrives at the proposition that the constellating force of the nuclear element corresponds to the latter's value, and its value corresponds to its intensity or energy.

In all this discussion, which I have reported almost in full in Jung's own words, Jung's attention is given primarily to the problem of energetic evaluation of the complex, especially the unconscious complex, a problem of, perhaps, some little clinical importance. It is unfortunate that he has not given more attention to the far more fundamental question, namely, that of the nature of the complex and the processes of its formation. The latter problem he leaves in almost complete obscurity. The terms used in the foregoing account are vague to a baffling degree. The complex is ‚a feeling-toned content' and consists, we have seen, of a nuclear element and a large number of constellated associations. And the nuclear element consists of two conditions (Bedingungen) one condition given through experience and one of dispositional nature. That is to say; a complex consists of a number of associations and two conditions, and around it may be grouped many psychical elements.

The one ray of hope seems to be given by the dispositional nature of one of the two ‚conditions' of the nuclear element. But Jung does not follow up this hopeful cue. It is clear that, in some sense, what he calls *libido* or psychical energy is not derived exclusively from the sex instinct (as it is in the Freudian doctrine). But whether it derives from other instinctive dispositions or *Triebe* is not made clear [1]). And Jung seems to go round always in a circle from value to energy, and from energy to value, unable to find the source of the energy, or to decide whether the energy derives from value, or value from energy. However, it seems clearly implied that, in his view, emotional excitement has some

[1]) In another essay Jung has written: „I believe that human activity is influenced by instincts in much higher degree than is usually assumed". Yet the only definite passage bearing on this question seems to negative this possibility. It runs: „Der Zusammenstoss von infantiler Triebhaftigkeit und Ethos kann nie vermieden werden. Er ist sogar, wie ich glaube, die conditio sine qua non der psychischen Energie". (Op. cit. S. 94).

close relation to both value and energy. On the whole, in spite of his vague mention of dispositions, he would seem to adhere to Freud's way of regarding the complex as containing a quantity of dammed-up or ‚fixated' energy: this seems to be clearly implied in his *Äquivalenzprincip*, according to which when a quantity of energy disappears from the Conscious, an equivalent amount is transferred to the Unconscious.

One other suggestion towards our problem is made by Jung in his doctrine of the Archetypes. „The collective Unconscious consists of a sum of instincts and their correlates, the Archetypes" And „Archetypen sind typische Formen des Auffassens", and are called also ‚primordial images'. But they are more than this; for, in yet another essay, Jung asserts that „they are as much feelings as thoughts" [1]). And again they are said to be innate dispositions to produce over and over again the same or similar mythical conceptions. But Jung nowhere developes this promising notion of a disposition which is „as much feeling as thought".

The French Psychologists

French psychologists have written much on the affective life and upon character. Three especially of the first rank have concerned themselves with our problem of affective organization, namely Fr. Paulhan, Alfred Fouillée and Th. Ribot.

The Contribution of Fr. Paulhan

Paulhan wrote at some length on *Le Souvenir Affectif* both in his *La Fonction de la Mémoire* (1904) and in his *The Laws of Feeling* (English edition. 1930) [2]). In the latter volume he is chiefly concerned to establish the conclusion that „every operation admits at the same time of feeling, intelligence and will. If then there is action everywhere in the mind and, in a sense, voluntary action, if everywhere there is intelligence and everywhere sensibility, clearly the old and still respected division of psychical facts into three groups, or their reference to three of four faculties, must be abandoned, modified or explained".

[1]) *Two Essays on Analytical Psychology*. English Trans. p. 68. In his discussion of complexes of 1907, Jung wrote of *Vorstellungskomplexe* of *Gefühlsbetonte Komplexe* and seemed content to regard feeling-tone of the complex as a sufficient cement for its constituent Vorstellungen.

[2]) The latter volume contains an essay on *Feeling, Intelligence and Will*, written in 1920, which may be regarded as Paulhan's final word.

This no doubt represents an advance for French psychology, which in the main has been atomistic, associationist, and unduly intellectualistic.

In his discussion of *Le Souvenir Affectif* we find the following passage relevant to our topic. „Comme le phénomène intellectuel, le phénomène affectif s'abstrait et se concentre en se dépouillant de bien des éléments non essentiels qui l'ont accompagné et qui à un certain moment ont aidé à constituer l'ensemble dont il faisait partie. Une amitié, un amour, une ambition sont des résidus de miliers de sentiments, d'émotions, d'impressions diverses, chacun de ces faits ayant été étroitement associé à des perceptions, à des images très variées. Il est impossible de dire combien d'émotions de chaque jour, d'actes, d'idées représente *un sentiment qui subsiste ou se développe pendant des années:* l'affection d'un fils pour sa mère, ou l'ambition d'un homme politique qui d'avocat devient conseiller .Beaucoup de ces émotions, de ces actes, de ces expériences quotidiennes sont oubliés, ne reparaissent plus à la conscience, *le sentiment lui-même dure cependant, s'affirme, s'organise, se développe et se transforme.* L'amour filial passe du sentiment de la protection reçue à celui de la protection offerte, l'ambition change d'object, se précise, se hausse et s'affermit. Il n'en subsiste pas moins une certaine direction d'ensemble, et un état d'âme général correspondant non seulement au sentiment de l'heure présente, mais à la lente évolution de ce sentiment, à tout ce qu'il a conservé du passé, à ce qu'ont laissé dans l'âme même les émotions et les images dont on ne se souvient plus". (p. 144, Italics mine).

In the foregoing passage (which stands out in isolation) and especially in the sentences which I have italicized, Paulhan recognizes and describes the leading facts of affective organization, without however making any contribution to the understanding of them, beyond merely attributing them to the working of the law of organization which he sets up as the great opponent of the law of memory proper. He is prevented from making any such advance by his adhesion to the nineteenth-century principle of dealing only with the phenomena of consciousness and not at all with the underlying mental structure implied by them. Thus love and ambition remain (no matter through how many years they may develope, no matter how complicated they may become, no matter how many non-essential elements they may shed) in

his account merely feelings. And, as was said in the foregoing section, out of feelings (as fleeting aspects of experience) no enduring organization can be built up, not even by the most exquisitely logical Frenchman.

In the other book [1]) Paulhan has a few words to say about passions. „The Passions are the highest manifestation of affectivity.... they are those which differ most from non-affective phenomena. We ought, therefore, to find the violent passions exhibiting in an accentuated form all the characteristics that we have successively considered in the preceding parts of this work. In fact passions are the sign of an extreme disorder in the mutual relations of the different systems that compose the organism and of the organism itself with its environment.... In extreme passion the arrest of tendencies is complete; at the same time their persistence and intensity are remarkable.... Passion, after all, is generally only the last phase in the evolution of a feeling, and it replaces the feeling when, for one reason or another, the psychical force set in action and not employed in a systematic manner happens to increase..... The extreme results of passion, viz. insanity and death, clearly demonstrate the peculiar violence of the affective phenomenon in its most pronounced manifestations. ... The gratification of a passion, that is to say, the diminution of the arrest, generally transmutes it into a feeling. .... A feeling differs very little from a passion except that its phenomena are less intense" [2]). (p. 64). At this point Paulhan bethinks himself of the necessity for rigid definitions and continues: „By feelings (*sentiments*) therefore, I understand those fairly durable affective phenomena auch as ambition, love, fear, hatred, etc., which are less violent than passions and are generally though not invariably, accompanied by a more or less clear consciousness of their object". He concludes what little he has to say on this fascinating topic by adding. „There is nothing particular to say about this class of .... affective phenomena, except that they possess all the characteristics of passion in a lesser degree" (p. 66). And, as he has treated of the passions merely by saying that they possess the characteristics of feelings in a higher degree, our understanding of these topics is not much advanced.

[1]) Which is the earlier work, first published in 1887.
[2]) My citations are from the English edition.

But a diligent search discovers a few other references thus: „A feeling such as love, ambition or sympathy, or any passion whatsoever, generally has for cause or for effect the bringing into play of very complex systems of tendencies and impulses" (p. 70). And, turning to a discussion specially on love, we find: „To love a person means that the image of that person or of his acts — in a word all that emanates from and is related to him — has been attached by innumerable and powerful links to our mental life. Thus we form systems of ideas, tendencies and impulsies which become more and more integrated". (p. 76). Exactly! But we ask — How? How attached? and by links of what nature? And we ask in vain.

The reference to tendencies and ‚complex systems of tendencies' excites our hopes; but, as with other of the French psychologists, the word ‚tendances' remains very obscure. Paulhan makes frequent use of the term and on several occasions refers us to the following definition offered apparently in good faith, on page 16. „We designate as a tendency the first part of the elements of one of these systems, those which, considered in relation to time, appear before the last and which consist in general of a certain activity of the nervous elements". A truly surprising definition! In short, Paulhan seems to get vague and fleeting glimpses of our problem, but never manages to define it in his own mind; rather flutters round it like a moth round a will-o'-the-wisp.

The Contribution of Alfred Fouillée

Alfred Fouillée, who in my view is a clearer and more penetrating thinker than Paulhan, treated of ideas as forces in his well-known two volume work of that name. Nevertheless in other and later works he has, like Paulhan, recognized that there are ‚tendances' which in some sense are not ideas and yet play a role of great importance.

In his volume *Tempérament et Caractère* [1]), Fouillée devotes the first section to *tempérament* which he takes in the sense of total natural constitution. Then follows a section on *caractère*, of which the first chapter is devoted to the thesis that *l'intelligence* is an essential factor of character. Nevertheless the emphasis is upon

[1]) I cite from the eighth edition of 1935.

the conative aspect of the whole personality. „Notre vrai caractère est donc dans la prise de conscience et de direction de nos tendances naturelles". We seek therefore to discover what in his view are *nos tendances naturelles*; and we are given but vague indications, as in the following sentence: „Nos impulsions aveugles et nos goûts instinctifs tiennent à notre tempérament; nos amours, à notre caractère". He writes: „la tendance essentielle à l'*être*, au *bien-être*, et au *plus être*, se surbordonne toutes les autres et constitue la vraie finalité interne .... Les tendances particulières ne sont que les déterminations spéciales de la tendance à maintenir et à accroître son être pour satisfaire sa volonté fondamentale" (p. 121). Again: „Ce qui échappe à l'analyse dans nos tendances est precisément ce qui est le plus profond et le plus fort: l'analyse ne saisit que des sensations ou des idées qui déterminent et particularisent les tendances, en les mettant en rapport avec le milieu extérieur (naturel ou social); mais les tendances mêmes ont une racine cachée dans la constitution à la fois organique et psychique" (p. 122).

After these few general remarks on *les tendances*, Fouillée plunges into the task of classifying characters, without further concern for the prior problem of elucidating the nature and development of character. But I find a few passages which incidentically bear upon the topic: „L'idée de patrie est un ensemble d'images toutes prêtes à paraître sur la scène de la conscience, avec les sentiments qui y ont été liés par un long usage et avec toutes les impulsions corrélatives à ces sentiments" (p. 118). „Ce qui importe au caractère proprement dit, c'est la direction de la volonté, et ce qui détermine cette direction, ce sont les sentiments. Chez un être intelligent comme l'homme, qui n'agit plus par simple réponse immédiate et réflexe à des sensations brutes, tout sentiment enveloppe quelque idée; c'est toujours un état de l'intelligence en même temps que de la sensibilité. Réciproquement, toute idée enveloppe du sentiment à quelque degré et est d'autant plus portée à sa propre réalisation qu'elle en enveloppe davantage. Une idée pure n'entrainera jamais un acte... Mais, d'autre part, le sentiment peut-il exister sans l'idée? Aurez-vous le patriotisme si vous n'avez pas l'idée de patrie? L'amour de l'honneur ou du devoir, si vous n'avez l'idée ni de l'honneur ni du devoir? .... Toutes nos idées, grace aux impulsions qu'elles enveloppent, aspirent à prendre vie .... c'est cette sorte de sys-

tème astronomique d'idées et d'impulsions corrélatives, gravitant autour d'un centre, qui constitue la volonté vraie, la volonté intelligente" (p. 169).

These passages leave us asking — What exactly is meant by the word *envelope*? For ideas are said to envelope feelings and impulsions; and feelings are said to envelope ideas. Alse we are left asking — What is the nature of the alleged correlations between feelings and impulsions? These questions are left unanswered in Fouillée's treatise; but a few scattered passages throw a little further light. „C'est pourquoi la connaisance abstraite est insuffisante sans l'amour du bien idéal .... Si donc le fond de notre caractère est surtout, comme nous l'avons dit, notre manière d'aimer, nous n'avons, en définitive, qu'un moyen d'élever toujours plus haut nos amours: c'est d'élever toujours plus haut nos pensées" (p. 187). „La femme est riche de sentiments complexes et organisés: c'est un coeur développé et non embryonnaire". Again: „Quant à la faculté religieuse, elle est le developpement dernier de trois sentiments qui, à l'origine, furent essentiellement vitaux: la crainte de l'inconnu, la curiosité de l'inconnu, enfin la représentation de l'inconnu à l'image du connu".

On the question of Fouillée's view of *impulsions* or *tendances* we find the following light: „On croit l'homme presque entièrement dépourvu d'instincts. Avec M. W. James nous pensons qu'il a, au contraire, des instincts beaucoup plus nombreux et plus variés qu'aucun autre animal; il a même, en un sens, tous les instincts, bons et mauvais. Et par instincte pous entendons des impulsions d'abord aveugles et irrésistibles, suscitées par les excitants appropriées" (p. 176).

Finally: „Dés que nous pensons, nous sommes ouverts au dehors, nous ne sommes plus une monade sans fenêtres: la société et l'univers entrent en nous de toutes parts. Or, à ces idées plus ou moins impersonnelles sont nécessairement attachés des sentiments, à ces sentiments sont attachées des impulsions qui, dans une certaine mesure, nous enlèvent à nous-mêmes. Un être intelligent ne pourrait être vraiment désintéressé" (p. 179).

Thus Fouillée, like Paulhan, discovers that man is not pure intelligence, and that his affective life undergoes in each man a specialized development and organization. And he goes further in recognizing, under the term *envelopment*, some intimate acquired relations between ideas, feelings and impulsions; also

in recognizing that ‚the way we love' is of the essence of character. Should he not have added, the objects of our loving, and also the objects of our hating?

Also Fouillée is a little less vague than Paulhan on the mysterious *tendances* and *impulsions*, firmly assigning them a role of high importance in our mental life. While for Paulhan they seem to be nothing more than mechanical reflexes and motor habits.

The Contribution of Th. Ribot

Ribot, who for so many years dominated French psychology, goes beyond all his compatriots in that, while they do no more than recognize the facts of affective organization with various degrees of confusion and obscurity, Ribot makes a resolute attempt to throw light upon them.

In his excellent study of the affective life, *La Psychologie des Sentiments* [1]), Ribot makes a very favourable opening by recognizing the fundamental role of conation; although he mars it somewhat by a too physiological *façon de parler* which identifies conation with bodily movement or innervation.

In his introductory chapter Ribot writes: „We note in the first place the *motor* manifestations .... although they may not always be motor in the strict sense, we may so call them, since they are all the result of a centrifugal action. We note also.... the existence of certain states which are agreeable, painful, or mixed, with their modes or shades, extremely variable in quality and in intensity. Of these two groups — the motor manifestations on one side, the pleasures, pains, and their compounds on the other side — which is fundamental? Can we put them on the same level, and if we cannot, which is that which supports the other? My reply to this question is clear: it is the motor manifestations which are essential. In other words, what are called agreeable or painful states only constitute the superficial part of the life of feeling, of which the deep element consists in tendencies, appetites, needs, desires, translated into movements. Most classical treatises (and even some others) say that sensibility is the faculty of experiencing pleasure and pain. I should say, using the same terminology, that sensibility is the faculty of tending or desiring,

[1]) The English translation from which I cite, entitled *The Psychology of the Emotions* is of the year 1897, and the first French edition is, I believe, of the same year.

and *consequently* of experiencing pleasure and pain. There is nothing mysterious in the tendency; it is a movement or an arrest of movement in the nascent stage. I employ this word ‚tendency' as synonymous with needs, appetites, instincts, inclinations, desires .... All the tendencies suppose a motor innervation; they translate the needs of the individual, whatever they may be, physical or mental; the basis, the root of the affective life is in them, not in the consciousness of pleasure and pain which accompanies them according as they are satisfied or opposed. These agreeable or painful states are only signs and indications; and just as symptoms reveal to us the existence of a disease, and not its essential nature.... so pleasure and pain are only effects which must guide us in the search and determination of causes hidden in the region of the instincts" (p. 2).

Ribot proceeds to define emotion as „a complex synthetic state essentially made up of produced or arrested movements, of organic modifications.... of an angreeable or painful or mixed state of consciousness peculiar to each emotion". He distinguishes five primitive emotions, fear, anger, affection, self-feeling, and sexual emotion; and goes on: „Above these emotions, which, though composed of several elements, are simple as emotions, and may be called innate since they are furnished by the organism itself, there are numerous forms of feeling manifested in the course of life, aroused by representations of the past or the future, by the construction of images, by concepts, by an ideal". In later chapters these higher emotions are described as composite; and the aim is proposed, in relation to each kind of composite emotion, to discover „from what primary emotions and in what manner, it is derived" (p. 261).

The book concludes with several chapters devoted to the study of character. And character is defined in the following way. Ribot distinguishes between on the one hand, a psychology which is analytic and abstract, and, on the other, a synthetic and concrete psychology. The task of the former is to discover the general laws of mind; that of the latter to study the peculiarities of individuals (here Ribot is avowedly following the proposal of J. S. Mill to construct a new science of individual peculiarities or Ethology). „So far it is clear", he writes, „that, in the new psychology, the analytic process has prevailed. In spite of these unfavourable conditions, some valuable work has been done in

the other direction, the principal being the determination of certain types of imagination, visual, auditory, motor, and other varieties. But the chief problem proposed to synthetic psychology is elsewhere, in the region of action, not of knowledge. It is practical and consists in determining the principal types of individuality from the kind of action and reaction which has its source in the feelings and the will. This is called by a name slightly vague. but consecrated by usage — character" (p. 382).

In this passage we have a curious mixture of truth and fatal error. I call the error fatal because it was the determining condition of Ribot's failure to illuminate the organization of the affective life, in spite of his sustained preoccupation with the problem and the very favourable opening which we have just now cited. For, instead of taking up seriously the problem — What is character? What are its constituents? How are they formed? How do they become organized and integrated in the system which is character? Ribot turns aside from this logically prior problem and, like all his predecessors, runs off on the more congenial, because easier, task of classifying characters, a task which can be successful only when the prior problem shall have been solved, at least in general outline.

The fatal error is the separation of the two kinds of psychology, the analytic and abstract from the concrete and synthetic. The actual historical separation has been the separation of the study of the intellectual life, under the head of psychology, from that of the affective life and of character, which has been left to the moral philosophers, under the head of ethics or of moral psychology. Neither separation can be justified. Both studies, that of the intellect and that of character, require to be both analytic and synthetic, both abstract and concrete. We need abstract laws of character, of feeling and volition, no less than of intellection; and we need to study intellection in concrete instances, no less than character. We need to analyse character no less than intellect; and we need synthetic study of intellect no less than of character. Further, the study of intellect and of character, of intellection and of volition, are necessarily complementary: for intellect and character are conplementary; either conception is but a product of abstraction, useful and indeed necessary for the purpose of clear analytical study; but, nevertheless, like all abstraction, a dangerous and falsifying process. What we need and what Ribot's

false doctrine (and Mill's) of the two kinds pf psychology would deny us, is a psychology, at once analytic and synthetic, and regardful equally of both intellect and character, and of their true relation as but two aspects of one whole, the total complex person.

There is one short section of this volume, namely the concluding pages of the introductory chapter, which we have left to the last, because, although it is highly relevant to our topic, it stands apart, isolated from the rest of the book. „It may be remarked that in contemporary treatises the word *passion* has almost entirely disappeared, or is only met with incidentally .... At present the term emotion is preferred to designate the chief manifestations of the affective life; it is a generic expression; passion is only a mode of it. Ordinary language rightly preserves the word, since it answers to a reality; and *passion is an event* [italics mine] of too much practical importance for us to dispense with speaking of it, explaining how it differs from emotion, what its nature is, and under what conditions it appears".

Ribot proceeds to answer these questions in two small pages. But, some ten years later, he returns to the problem, devoting to it a considerable volume [1]); having realized, it would seem, that the passions are deserving of a much fuller treatment than he could give them in two pages, and that they present many problems not easily to be solved.

---

[1]) *Essai sur les Passions.* Paris, 1907. In order to show the position from which Ribot sets out on his more sustained effort to discover the nature of the passion, I cite here the following passages from the very brief discussion of this earlier volume: „If we seek the special mark of the passion and its characteristics among the phenomena of the affective life, we must distinguish it from emotion on the one side and insanity on the other; for it is situated mid-way between the two. It is difficult to express with clearness and precision the difference between emotion and passion. Is it a difference of nature? No, for emotion is the source whence passion flows. Is it a difference of degree? This distinction is precarious; for while there are calm emotions and violent passions, the contrary may also be met with. A third difference remains, duration. It is generally said that passion is an enduring state; emotion is the acute form, passion the chronic form. Violence and duration are the characters usually assigned to it; but we may further define its essential nature. *Passion is in the affective order what an imperative idéa (idée fixe) is in the intellectual order*; we might add what a contraction is in the motor order. It is the affective equivalent of the imperative idea". Further: „At a given moment some circumstance causes a shock; that is emotion. Some tendency annihilates all the others, momentarily confiscating the whole activity to its profit; that is the equivalent of attention. Usually this passage of movements in a single direction is not enduring; but if, instead of disappearing, the emotion remains fixed, or repeats itself incessantly, always the same, with the slight modifications involved in passing from the acute to the chronic stage — that is passion, which is permanent emotion" (p. 21).

We may therefore turn to this later volume in which Ribot struggles long and earnestly with the problem, What is a passion? [1]) The spectacle is dramatic; and indeed, when we remember that this is the climax of the work of the man who dominated French psychology for a whole generation and that he is seeking to formulate a conception of central importance for all psychology, one which, first hinted at by the great Kant, had eluded all his successors throughout the nineteenth century, the spectacle seems to rise to the level of tragedy. The book falls into three parts. The first part is devoted to the question, Qu'est-ce qu'une Passion? He begins by complaining of the ostracism of the word *passion* among modern psychologists, and ascribes this to the tendency to substitute the word *émotion* as a synonym for the older term *passion*, without recognition of the fact that both names are needed in order to mark an important distinction, that between emotion and passion. „Cette identification de l'émotion et de la passion qui sont deux modes distincts de la vie affective.... me parait malencontreuse et propre à embrouiller une nomenclature déjà très trouble" (p. 3) [2]).

He proceeds to divide „les manifestations de la vie sentimentale en trois groupes; les états affectifs proprement dits, les émotions, les passions". The first, he says, are „des états affectifs qui expriment les appétits, besoins, tendances, inhérents à notre organisation psychophysique. Ils constituent le cours régulier et ordinaire de la vie qui, chez la moyenne des hommes, n'est faite ni d'émotions ni de passions, mais d'états d'une intensité faible ou modérée".

Those of the second group, the emotions, have „pour caractère de commencer par une choc, une rupture d'équilibre.... L'émotion se definit par deux caractères principaux: l'intensité, la brièveté" (p. 6).

Of the third group he writes: „La passion a d'autres caractères. Provisoirement, il suffit de dire qu'elle s'oppose a l'émotion par

---

[1]) In his *La Logique des Sentiments* of 1905, Ribot briefly discusses the passions, taking *timidity*, *love*, and *jealousy* as typical of three principal classes of passions. We may note in addition that he there defines passion as *une émotion persistante et obsédante*. „J'entends par passion une émotion devenue fixe et ayant, de ce fait, subi une métamorphose. Son caractère propre est l'obsession permanente ou intermittente et le travail d'imagination qui s'ensuit. Ainsi la timidité est une passion issue de la peur; l'ambition et l'avarice des passions issues du *self-feeling*" (p. 67).

[2]) We remember that in 1897 he himself has asserted that passion is only a mode of emotion, one species of the genus emotion, „a permanent emotion".

la tyrannie ou la prédominance d'un état intellectuel (idée ou image); par sa stabilité et sa durée relatives. En un mot et sauf quelques réserves qui seront faites plus tard, *la passion est une émotion prolongée et intellectualisée*, ayant subi, de ce double fait, une metamorphose nécessaire. Plus nous avancerons dans notre étude; mieux nous verrons que l'émotion et la passion, malgré un fond common, sont non seulement différentes mais *contraires* [1]). L'émotion est un état primaire et brut, la passion est de formation secondaire et plus complexe. L'émotion est l'oeuvre de la nature, le résultat immédiate de notre organisation; la passion est en partie naturelle, en partie artificielle, étant l'oeuvre de la pensée, de la réflexion appliqués à nos instincts et à nos tendances. L'émotion s'oppose a la passion, comme en pathologie, l'état aigu et l'état chronique. On peut même prolonger la comparaison: la passion comme la maladie chronique a des poussées imprévues qui la ramènent à la forme aiguë, c'est-à-dire au fracas de l'émotion; une passion à longue durée est toujours traversée par des accès d'émotion" (p. 7) [2]).

Turning to the question of the formation of passions through the course of the individual's experience, Ribot begins by distinguishing all persons into two large classes, on the one hand the amorphous who have no passions, and on the other hand, *les passionés*. The latter class he divides again into two groups. „Il me parait utile de réduire les passionés à deux types: l'homme d'une seule passion: l'homme de plusieurs passions simultanées ou successives".

Of the former, *les grands passionés*, he writes: „La passion est ici dans toute sa simplicité et elle justifie la définition bien connue: exagération d'une tendance" (p. 13). Ribot accepts this definition, and with fatal consequences.

In order to clear the ground, it seems clear, let me say at once, that Ribot is here confusing under the one name *passion* two very different things. He accepts *la gourmandise*, which I suppose we may call ‚gluttony', as the very type of the passion of *le grand pasioné*. Now gluttony is, as he rightly says, just a gross exaggeration or hypertrophy of one primitive animal tendency.

---

[1]) This, it would seem, is difficult to reconcile with Ribot's earlier dictum that passion is a special kind or species of emotion.

[2]) We remember his assertion that there are calm emotions and violent passions; and we try to imagine a violent passion traversed by an access of calm emotion.

In the refined epicure it may become intellectualized; but that is a comparatively rare case; the common simple glutton, such as one may see any day in any French restaurant, cannot be said to suffer from an intellectualized passion; and even the gluttony of an epicure has little in common with the grand passion of a Dante for his Beatrice.

Therefore, of the three essential marks of the passion which, as Ribot affirms, distinguish it from the emotion, namely, intellectualisation [1]) or l'idée fixe, endurance (la durée), and intensity; the first, which he asserts to be the most essential, is lacking in gluttony.

In discussing this first mark of the passion, Ribot asserts that the passion is characterized by *l'idée fixe* [2]); and goes on to assert, correctly enough, that *l'idée fixe* is itself „un état complexe: il est fait d'éléments intellectuels et d'éléments affectifs-moteurs"; and further that „il est clair que dans la passion, l'idée fixe ne vaut et n'agit que par les états affectifs et moteurs concomitants et que ceux-ci forment la plus grosse part du phenomêne total". „En somme, l'idée fixe est le signe sinon la cause d'un surcroit d'énergie, mais avec *dérivation* dans un sens exclusif. Elle agit comme pouvoir moteur ou inhibiteur" (p. 23). All of which raises the question whether *l'idée fixe* is not itself a passion, according to Ribot's definition. A suggestion which seems to be confirmed when we read that all the intellectualisation of the passion „est, au fond, l'oeuvre de la *tendance* attractive ou repulsive, cause première de toute passion, qui maintient l'idée fixe" (p. 27). But we ask — What, in simple gluttony, is *l'idée fixe*?

The intellectualisation of a passion is a matter, we are told, of association and dissociation and of imagination. „Finalement, autour de 'lidée maitresse, centre d'attraction et de repulsion, par ce double procédé, associatif et éliminatoire, se construit un édifice solide, affermi contre les assauts, qui souvent ne croule qu'avec l'individu" (p. 29). The passion then is an edifice, a structure gradually growing in complexity and solidity, one which may endure till death.

Next we are told that, in the formation of a passion, a principal

---

[1]) „la passion qui est une forme intellectualisée de la vie affective p. 25".

[2]) Ribot cites with approval the dictum of Malapert: „La passion est, comme on l'a dit, dans le domaine de la sensibility ce que l'idée fixe est dans le domaine de l'intel ligence".

role is played by „des souvenirs affectifs: sans eux nulle passion. C'est avec des images de cette espèce que sont construites les passions réelles" (p. 33). Which again seems to rule out the so-called passions of the type of simple gluttony.

After a passage on judgments of value which are said to *exist* in all passions, we reach the following summary description of the passion: „la passion vue *synthétiquement* est donc un solide faisceau de forces coopérantes: au centre, une tendance énergiquement poussée vers un but fixe; entrainant dans son tourbillon des perceptions, des images et des idées; ajoutant au réel le travail de l'imagination; enfin soutenue par une logique rationelle et extra-rationelle. Ainsi s'explique sa puissance irrésistible et l'anéantissement de la volonté qui en est la suite" (p. 42).

The first section of the book concludes by distinguishing passions of two types, „l'un d'impulsion, l'autre d'arrêt". In the former „l'élément moteur est le plus fort, l'élément intellectuel est le plus faible", and conversely in the other type (of which avarice is named as representative) [1]).

The second and largest part of the book is devoted to the genealogy of the passions. Returning to his definition of the passion as the exaggeration of a tendency, Ribot remarks that „toute passion doit, en principe, pouvoir être ramenée à un état élémentaire, à une tendance dont, suivant la définition classique, elle n'est que l'exagération". He adds that the task would be simple if we knew what are the primitive tendencies or instincts of the human species. We should then have a complete list of the possible passions, one for each tendency; and it would remain only to discover if possible how and why in each case the tendency becomes exaggerated.

And since, in his earlier work [2]), Ribot has told us that there are five primitive or primary emotions and that „at the root of each of the primitive emotions there is a tendency, an instinct"; it would seem to follow that there must be five passions, and five

---

[1]) This section contains also a few remarks on the genesis of passions:
„On peut, dans beaucoup de cas, surtout pour les passions faibles, accorder une grande part aux causes extérieures enumerées précédemment, au milieu, à l'éducation, au hasard. Mais cette explication est inacceptable pour les grandes passions qui semblent naître par génération spontanée: — Une passion qui absorbe toute la vie ne peut provenir que d'une disposition congénitale analogue; c'est pourquoi nous avons dit plus haut qu'elle est innée et indéracinable". (p. 16).

[2]) *Psychology of the Emotions*, p. 17.

only, possible to every man, corresponding to these five primitive emotions, fear, anger, affection, self-feeling, sex emotion; each passion consisting in an exaggeration or hypertrophy of one of these five innate emotion-tendencies; and the five possible passions would seem to be describable as timidity, irascibility, excessive affectionateness, pride or vanity, and sex lustfulness; to which, by courtesy as it were, are added „la gourmandise et l'ivrognerie".

This is further borne out by many other passages: e.g. „La grande passion ressemble donc à un instinct; elle est un automatisme acquis et temporaire; tant qu'elle dure, elle réagit avec une constance inébranlable". But it would seem that the number of possible passions is more restricted than the number of native tendencies; for he adds: „Mais toutes nos tendances n'engendront pas de grandes passions, elles n'en possèdent pas l'étoffe. Beaucoup ne produisent que des passionnettes; d'autres, peu nombreuses, sont totalement infécondes".

Yet Ribot goes on to make it clear that he recognizes a larger number of tendencies each of which may become hypertrophied into a passion. He makes of them four groups (1) „Tendances ayant pour but la conservation individuelle", which engender „ces deux passions, la gourmandise et l'ivrognerie"; (2) The sex tendency, which by hypertrophy becomes *l'amour*; (3) Tendencies which contribute to the expansion of the individual, and which engender several passions. It is not made clear whether this is a single tendency, or several; for although Ribot speaks of tendencies of this class, he also writes of „la tendance fondamentale de l'individu à l'expansion de son être.... Elle nous parait la source originelle de passions diverses". In fact he devides the passions of this third group into three classes „suivant que cette expansion s'opère par sympathie, par conquête, par destruction". The whole group comprises the following passions: natural love, love of sport, of adventure, of gambling [1]), of power, together with ambition, avarice, hatred, and jealousy.

In the course of the discussion of hatred it appears that this passion is engendered not by one tendency only, but by two: „la haine est une combinaison psychologique homogène, car elle

[1]) Of this passion he alleges: „Nous sommes pourtant en face d'une passion qui ne le cède à aucune autre par son antiquité, son universalité, sa violence et ses résultats tragiques". It is „une des formes types de la passion dynamique".

est faite de tendances statiques à la repulsion — état permanent; et de tendances dynamiques à la destruction — état intermittent".

(4) The passions of the fourth group derive from „les besoins plus rares, moins exigeants chez la plupart des hommes, par conséquent moins aptes à devenir prépondérant ou tyranniques" (p. 58) and therefore less apt to become passions by hypertrophy; the passions of this class named by Ribot are five in number, as follows: the esthetic passion, the scientific, the religious, the political, and the moral passion.

Of these the first derives from „le besoin permanent et obsèdant de vivre dans un monde autre.... le monde de la création imaginative". The second he passes over as presenting nothing new. The religious passion is *très composée* and presents itself in various forms; but what its components are, what hypertrophied tendency it involves, we are not told. The fourth „la passion politique, a son origine dans une tendance très simple.... l'instinct social ou la tendance à vivre en groupe". But it does not result from simple hypertrophy of this tendency. „Cette tendance sociale, émergeant de sa simplicité primitive, doit subir bien des additions et transformations avant de devenir la passion politique.... Seul, l'instinct social ne suffirait pas à engendrer la passion politique. Il n'est qu'une matière première qui doit être doublée d'une autre tendance — la volonté de puissance", (p. 113). For good measure, Ribot adds ambition, pride, vanity and hatred; and concludes: „Tout cela forme un faisceau d'éléments solides, vigoureux dans l'action, et il est inutile d'y relever les marques de la grande passion: idée fixe obsédante, tenacité invisible, énergie".

Ribot does not tell us what is the *idée fixe* peculiar to the political passion, and he offers no suggestion towards the solution of the problem — how these *éléments* are bound together to form the *faisceau* which is *la passion politique*. The critical reader is left asking the prior question — Is there after all any such passion?

One's sceptisism is accentuated when Ribot goes on to say that the social instinct is the origin also of another passion, namely patriotism. „L'instinct social est aussi l'origine d'un sentiment complexe transformable en une grande passion qui entraine au dévouement absolu, à la mort; c'est *le patriotis-*

me. .... Le patriotisme est, dans sa composition psychologique plus simple que la passion politique, n'ayant à proprement parler qu'un seul élément" (p. 119). No further light is thrown upon it, and we are left to suppose that it conforms strictly to Ribot's fundamental formula in being, simply and purely, the hypertrophied social or gregarious instinct.

The moral passion is described similarly as the hypertrophied form of an innate moral tendency introduced at this point and *ad hoc.* Again we are left sceptical and more than ever disposed to question the validity of Ribot's fundamental recipe, namely: Take an instinctive tendency, magnify or accentuate it, and you have a passion .

Then, strangely enough after what has gone before, Ribot raises the question whether an emotion can become a passion, and answers it in the negative. „En fait, *il n'y a que les tendances qui l'engendrent.* L'émotion-choc peut être un préambule, un essai, un avant-coureur, une étape, mais ne devient pas plus passion, au sens strict, que des crises aiguës ne deviennent une maladie chronique" (p. 134).

This long section concludes with the assertion that it is impossible to classify the passions.

There follows the third principal section of the book entitled *Comment les Passions finissent.* It begins by raising the question — How do the passions take form and develope? We gather the following gleams of light. „Toute passion parait se former *par actions lentes*.... le début est lent et insidieux.... Le plus souvent, la passion est déja virtuellement formée avant de se révéler à la conscience.... le mouvement d'avancements ou de reculs suit la loi de l'excitation nerveuse, il marche comme une avalanche, il fait boule de neige ou, pour employer le langage scientifique, il agit par sommation. Ce que l'on appelle l'influence de l'habitude sur la genèse et le maintien d'une passion.... n'est pas autre chose", (p. 138).

Nevertheless: „Il y a d'ailleurs un fait positif et précis que marque le moment où la passion est constituée et qui peut servir de critérium; c'est l'apparition de l'idée maitresse, dirigeante, reconnue comme telle" (p. 139).

As to the question of the termination of passions, we are told, there are five modes (1) „par épuisement ou habitude; (2) par transformation en une autre; (3) par substitution; (4) par la

folie; (5) par la mort" (p. 142). Upon which one may comment that the first named mode, *par habitude*, is difficult to reconcile with the statement that *habitude* plays a principal role also in the formation of the passion.

We note also: „Comme la passion est le résultat d'un drainage à son profit de l'énergie totale, une condensation de la personnalité sous une forme unique et prépondérante, cette hypertrophie partielle est nécessairement compensée par le dépérissement du reste".

On a later page Ribot returns to the role of habit, and we note: „L'habitude.... n'entre pas dans la passion à titre d'élément constituant; c'est un facteur accessoire qui agit par l'influence... Dans la passion vraie, sans cesse vivante et renouvelée, il n'y a pas d'habitude a proprement parler, mais son apparence, son simulacre, non sa réalité". (p. 148).

Finally, Ribot debates the question: „Y a-t-il des caractères qui distinguent la passion de la folie? Y a-t-il une communauté de nature entre la passion et la folie?" He finds it difficult to reach a decision. He remarks that the resemblances are striking, and adds: „J'avoue incliner personnellement vers la thèse pathologique. Passion et folie me paraissent taillées dans la même étoffe". He concludes: „Toute passion même courte est une rupture dans la vie normale.... Elle est un état *anormal* sinon pathologique, une excroissance, un parasitisme". From which the conclusion would seem to follow that the truly normal man has no passions.

What verdict must be given upon Ribot's resolute effort to solve this long-standing riddle? Briefly, I would say, it seems indisputable that Ribot has confused facts of two (perhaps three or more) very different orders. On the one hand are the instances which may properly be described as instances of hypertrophied or excessively strong natural or native tendencies. Such are the cases of simple gluttony, of lustfulness or concupiscence, of extreme general timidity, of extreme irascibility. On the other hand are all the multitudinous forms of love and hatred properly so-called; forms of acquired but lasting devotions to particular objects (whether individual, general, or abstract); and forms of acquired aversion from particular objects.

Ribot's discussion is vitiated throughout by this confusion. In the main what he has told us of the passion refers to the facts

of the former order. And though he has made many assertions (notably what he has said of the intellectualisation of the passion) that are true of the latter order, he has failed (blinded by his fundamental definition — the hypertrophied tendency) to seize the most essential mark of all instances of this second order, namely, *the acquired direction, concentration and fixation of natural tendency or tendencies upon some particular object*, the object of love or hatred.

It is indisputable that Ribot fails to find any clear cut answer to the question on which at the outset of his enquiry he lays so much stress, namely — What is the difference between a passion and an emotion? No one of the distinguishing marks which he proposes at different stages of his discussion can be accepted by any critical reader.

The passion is said to be a permanent emotion: but Ribot himself tells also us that the passion and the emotion are not only different but *contraires*, and that they are „deux modes distincts de la vie affective".

The passion cannot be defined as a violent emotion; for, as he tells us, some emotions are violent and some passions are calm.

The passion involves a dynamic tendency, but so does the emotion, according to his own showing. Is it, then, that in the passion the tendency is very strong, exaggerated, while in the emotion it is weak. Surely not, for what tendency can be stronger than the tendency to flee away when intense fear is excited, or than the aggressive tendency of the intense anger we call rage or fury!

Nor will the suddenness of onset, the shock, of emotion serve to distinguish the emotion, although Ribot insists so much upon it. For in some cases an emotion sets in and waxes slowly to a maximum. Do we not all recognize the fact in such expressions as ‚growing angry', ‚he was working himself up to a state of anger', ‚chill fear invaded him and grew stronger until he could no longer disguise the fact from himself'. And, on the other hand, is not ‚love at first sight' a term that validly describes the inception of a devotion that may prove to be strong and lasting? And it is not true that the experience thus described is, in some instances, quite overwhelming?

In one passage alone does Ribot for a moment touch upon what seems to be the true distinction between the emotion and the

passion (in the second and truer of the two meanings which he gives to the word); namely, he speaks of the passion as an edifice. Now Ribot nowhere, I think, uses the term structure. But an edifice is a structure; and a passion such as love is a structure, an enduring, gradually growing, organized system; whereas emotion is a fleeting aspect of experience; an evancescent process: in no sense a structure or an edifice. But Ribot, having touched once upon this cue, lets it go without developing it, without realizing its importance. Nowhere does he explicitly recognize the all-important distinction between, on the one hand, mental structure and, on the other hand, mental functioning, process or activity.

Everywhere, like well-nigh all the psychologists of the nineteenth century, he continues to use such fatally ambiguous terms as ‚idea', ‚mental states', ‚mental or affective phenomena'; terms which are convenient just because they are ambiguous, and because they encourage those who use them to avoid the labour of making and carefully observing the distinction between structure and function. Accordingly, Ribot nowhere makes use of the all-important conception of mental disposition, or structural component of that vastly complex system which is the mind of man.

An account of the passions which fails to discover any essential difference between *la gourmandise*, however intellectualized in the person of an epicure, and the passion of a Dante for his Beatrice surely is very seriously at fault! And when the same discussion reaches the conclusion that all instances of love, of patriotism, of ambition, of religious devotion, are pathological or at least abnormalities, the verdict is confirmed.

Finally, when we find Ribot reaching the conclusion that the normal or ideal man has no passions, then we may feel certain that, whether or no we accept his account of the passions, there remains untouched and unilluminated by it the vastly greater part of an immensely important field for psychological enquiry, namely, that organization of the affective life which constitutes character in the stricter sense of that word, the sense in which it has been used by Kant and Goethe and by the majority of British writers. For to put aside, as Ribot does, the great mass of average men, the quiet steady trustworthy workers who lead uneventful lives, as amorphous, as having no character, on the ground that they display no violent passions, is to leave the essential problem of character untouched.

Contribution of Alfred Binet

The views of two other eminent psychologists of France require brief mention. Alfred Binet after many years of devotion to studies of the intellectual side of our mental life, began in his later years to discover that he had neglected a vastly important aspect of our nature, In *L'Année Psychologique* for 1911 he published an article (his last I believe) entitled *Qu'est-ce qu'une émotion? Qu'est-ce qu'un acte intellectuel?* The main feature of the article is the recognition of something of the nature of affective organization under the term *attitude.* I cite the most relevant and explicit passage: „An attitude is composed of a series of intelligently coordinated acts with an end in view.... The attitude is of an emotional nature when it is accompanied by strong sensations of organic nature.... Inversely, we shall say that the attitude is of intellectual nature when it is accompanied by a minimum of subjective sensations and a maximum of objective sensations and images.... It is advantageous to consider the attitude as a variety of motor response which distinguishes itself from others by the superior character of its organization; and one may say that the more this organization is realised, the more the attitude.... will be of an intellectual kind; on the contrary, the more feeble the organization is, the more we will have to do with a phenomenon of emotion".

The article represents a sort of soul's awakening and an attempt to graft on to a psychology of the traditional sensationistic atomism some recognition of the facts of conative and affective organization; with somewhat bizarre results.

Contribution of Prof. Pierre Janet

Professor Pierre Janet, happily still the *doyen* among French psychologists, has undergone a development somewhat similar to that of Binet indicated in the passage cited above. His earlier works apply the traditional atomistic sensationism to the interpretation of the problems of psychopathology. In his later works we hear much of *tendances* and of their fundamental role in our mental life. But he has not, I think, made any notable contribution to our understanding of the organization of these all-important dynamic factors.

I have examined several of the books on the affective life written by younger French psychologists without discovering any evidence of advance in this direction [1]).

Brief reference may here be made to the *Traité de Sociologie Générale* of Vilfredo Pareto. This enormous treatise of 1761 pages [2]) largely consists of a sort of pseudo- or quasi-psychology. The word *sentiments* occurs many times and plays a principal role in all Pareto's explanations of social phenomena. But it is impossible to discover any contribution to our understanding of our mental life; as I have sufficiently shown in an article, *Pareto as a Psychologist*, in the first number of *The Journal of Social Philosophy* [3]).

The Psychologists of America

In his *Principles of Psychology* (1890) William James presented and discussed the whole field of psychology as developed to that date, with special emphasis upon American contributions. The book (containing more than half a million words) is almost as comprehensive and complete a review as it is brilliant and original. Almost every topic and every important problem is dealt with and illuminated. But there is one outstanding exception, namely, the organization of our affective life. This is conspicuous by its absence from these fascinating pages. An enquiry into the grounds of this omission would be instructive. I offer only a few illustrative comments. The absence from the index of the following terms is significant: desire, motive, conation, urge, purpose, passion, sentiment, disposition, character. If these words appear in the text, it is very incidentally only; they were not regarded as requiring any special discussion.

In part the explanation of James' neglect of our topic is to be found in the fact of his two-sided personality. There was the James who was for many years a professor of physiology, strictly disciplined in nineteenth-century Science; and there was the speculative James of unlimited sympathy and hospitable to every possibility, who rebelled against the narrow negations of that science.

We may see this duality very clearly in James' treatment of

---

[1]) *L'émotion* by Larguier des Bancels and *L'émotion* by Renée Dejean, Paris, 1933.
[2]) Notably recently translated into English under the title *The Mind and Society*.
[3]) Vol. I. October 1935.

the problems of action. He accepts whole-heartedly the reflex-arc theory of the brain and its functions. He writes of the play of ideas almost as though he were a mechanical associationist. He accepts the theory of ideo-motor action, which is the only theory of action consistent with Associationism. Instinctive action is identified with mechanical reflex action; various simple motor-mechanisms are classed as instincts; and the goal-seeking, teleological or purposive nature of all instinctive action is ignored. He uses the word ‚impulse' to translate the German word *Trieb*; and says that „every instinct is an impulse"; but goes on to adopt what he calls „our simple physiological conception of what an instinct is", and describes it as „a mere excito-motor impulse, due to the pre-existence of a certain ‚reflex arc' in the nerve-centres". Conative experience is denied and explained away as misinterpretation of kinesthetic sensation; and the conative factor in emotion is ignored. „The more closely I scrutinize my states, the more persuaded I become that whatever moods, affections, and passions I have are in very truth constituted by, and made up of those bodily changes which we ordinarily call their expression or consequence" (consequences of mechanical reflex actions).

Yet James recognizes very fully that instinctive or innate propensities are the foundation of all, or a very large part of, our mental activities. When he discusses reasoning, the all-important role of conation is recognized under the head of selective sagacity. When he comes to discuss voluntary action specifically, he treats all lower forms of action as the outcome of the play of mechanical association and the ideo-motor principle; but then, when he comes to the highest form of action, the making, sustaining, and carrying out, of difficult resolutions, he invokes from ‚the blue', from some supernal realm, a factor of a new order quite other than the ideo-motor reflex processes, a creative over-riding factor which he calls ‚the fiat of the will'.

This last doctrine is particularly relevant to our topic. James finds himself driven to it: for he cannot be content to regard such highest-level action as a mere compounding of mechanical reflexes; and yet has almost completely overlooked the fact that volition is the work of character, the complex highly organized system of affective dispositions each of which is the spring of conative impulses, goal-directed tendencies, in their most funda-

mental nature forward-looking, goal-seeking, purposive, or teleological.

James does give a passage to mother-love; but calls it an instinct. He mentions ambition; but calls it a feeling. He speaks of ideals and of ideal motives and impulses; but does not pause to consider what these words imply. He recognizes the vast importance of ‚interest'; but, though he brilliantly refutes psychological hedonism („The silliness of the old-fashioned pleasure-philosophy"), he gives us no alternative account of ‚interest', nor stops to consider how ‚interest' can emerge from the play of mechanical reflexes. The only light we get on ‚passions' is the statement that the passion of love is „a monomania, to which all of us are subject, however otherwise sane". Hatred is not discussed. He makes much of insistent or fixed ideas; but never inquires how they are ‚fixed' or why they are insistent, why „the impelling idea is simply the one which possesses the attention".

Amidst all this neglect of the conative aspect of our mental processes, the only redeeming phrases are that „consciousness is in its very nature impulsive" (p. 526) and „The impulsive quality of mental states is an attribute behind which we cannot go. Some states of mind have more of it than others, some have it in this direction, and some in that" (p. 551). All of which is, no doubt, true; but not very helpful when we ask — Why is A impelled towards this, B towards that, and C towards a third goal?

If one seeks contributions to our problem from James' American contemporaries, one turns naturally to J. M. Baldwin and H. R. Marshall. But I find no trace of any such contribution in the pages of either.

The Views of Prof. John Dewey

Professor John Dewey, generally acclaimed as the most influential of living American philosophers, published in 1922 his *Human Nature and Conduct, An Introduction to Social Psychology*. Since it is in Social Psychology that the understanding of the organization of the affective life becomes of central importance, the indispensable foundation for all the social sciences, as well as for ethics, with which last field Dewey has been much occupied, we turn hopefully to this book.

We find much about habits, which are treated as the dynamic factors of personality. „The dynamic force of habit taken in connection with the continuity of habits with one another explain the unity of character and conduct, or, speaking more concretely, of motive and act, will and deed". Which statement provokes the comment — It would do so perhaps if we understood what is meant by ‚the continuity of habits'; but the expression requires just as much illumination as does ‚the unity of character'; and Dewey gives us no such illumination [1]). And if we enquire after the origin of this dynamic impulsive power of habits, we learn only that „a habit has this power because it is so intimately a part of ourselves. It has a hold upon us because we are the habit". Bad habits are said to be especially instructive. „They teach us that all habits are affections, that all have projectile power, and that a predisposition formed by a number of specific acts is an immensely more intimate and fundamental part of ourselves than are vague, general, conscious choices. All habits are demands for certain kinds of activity, and they constitute the self. In any intelligible sense of the word will they *are* will. They form our effective desires and they furnish us with our working capacities" (p. 25).

Dewey speaks of *bodily and moral habits*, but makes no appreciable distinction between them. The habit of standing in a good or bad posture is regarded as typical of both kinds. Conation is not recognized as something of a different order from mechanical sequence. For „all habit involves mechanization", and „to understand the existence of organized ways or habits we surely need to go to physics, chemistry and physiology rather than to psychology".

Nevertheless, habit seems to mean, for Dewey, something other than a disposition to a repetition of movements in fixed sequence. For „we may also use the words attitude and disposition.... Attitude and, as ordinarily used, disposition suggest something latent, potential, something which requires a positive stimulus outside themselves to become active .... the essence of habit is an acquired predisposition to ways or modes of response, not to particular acts except as, under special conditions, these express a way of behaving".

[1]) Unless the following be regarded as throwing light: „Were it not for the continued operation of all habits in every act, so such thing as character could exist. There would simply be a bundle, an untied bundle at that, of isolated acts. Character is the interpenetration of habits" (38).

But the book consists of four parts of which the one on habit is only the first. There follows Part II devoted to *The Place of Impulse in Conduct.* Here we find a different doctrine, one very difficult to reconcile with the teaching of Part I, namely, that habit is all-comprehensive, and will and character are merely a bundle of interpenetrating habits.

Impulses are specific native activities which are „organs of re-organization and readjustment". And with „an interest in new uses of impulses, there has grown up some consciousness of the extent to which a future new society of changed purposes and desires may be created by a deliberate humane treatment of the impulses of youth" (p. 96).

The relation between habit and impulse remains obscure; and, since all the discussion is conducted at the highly abstract level at which concrete instances are never mentioned but only *habit* and *impulse* in abstract, one gets the impression of two separate psychologies in one of which habit, in the other impulse, is the dynamic factor. For habit and impulse are by no means identical. We are told that habit and impulse may war with each other; that habit is plastic to the transforming touch of impulse; that impulse gives habit pertinence and freshness and liberates power; that „habits once formed perpetuate themselves by acting unremittingly upon the native stock of activities. They stimulate, inhibit, intensify, weaken, select, concentrate and organize the latter into their own likeness. They create out of the formless void of impulse a world made in their own image".

In spite of all this obscurity, it seems clear that Dewey means to recognize that impulses become organized in systems of some sort: „There are an indefinite number of original or instinctive activities, which are organized into interests and dispositions according to the situations to which they respond".

Further, it seems that under habit he means to include much more than motor habits; for he speaks of habits of thought and of feeling, and ascribes to each habit all the powers of an intelligent adult; they are the sole agents of observation, recollection, foresight and judgment. „Concrete habits do all the perceiving, recognizing, imagining, recalling, judging, conceiving and reasoning that is done". But it remains obscure whether each habit does all these things, or whether each of these functions is performed by a special corresponding habit. Also a habit, it is said, is

intelligent, sensitively percipient, informed with insight, aware of what it is about, sincere, and flexibly responsive; and will meet its own problems and propose its own improvements.

Amidst the vast obscurity of habit as conceived by Dewey, one thing only can I ascertain from his pages: namely, impulses become in some sense incorporated within habits. „Habit as a vital art depends upon the animation of habit by impulse". How such incorporation takes place we are not told. The most illuminating passage I can find is the following: „Any impulse may become organized into almost any disposition according to the way it interacts with surroundings. Fear may become abject cowardice, prudent caution, reverence for superiors or respect for equals .... the actual outcome depends upon how the impulse of fear is interwoven with other impulses. This depends in turn upon the outlets and inhibitions supplied by the social environment" (p. 95?). This statement seems to be a relatively definite assertion that there is a native impulse, properly called ‚fear', which may become organized with, or without, other impulses into a great variety of dispositions or habits; but it is later undermined and destroyed by the assertion that fear is not native, and that there is no one fear having diverse manifestations; there is no one instinct or impulse of fear, but there are only many kinds of fear. And similarly of anger: „The notion that anger still remains a single force is a lazy mythology". And the same is asserted of the impulses of hunger and of sex, and, by implication, of all impulses.

The meaning of all this long diatribe seems to be this: the impulses of any one kind which we commonly class together under a single name, such as fear (or anger, or sex, or hunger) have no common origin in a single disposition which is part of our native constitution; rather each successive concrete impulse of fear (anger, sex, or hunger) is evoked out of the void on each occasion of its occurrence, by the circumstances of the moment. But, if this is true doctrine, what becomes of the statement that such impulses become organized into dispositions? „There are an indefinite number of original or instinctive activities, which are organized into interests and dispositions according to the situation to which they respond" (p. 147). To talk of the organization of activities or impulses into dispositions is nonsense, unless this be merely a loose way of saying that the dispositions which

are their source (from which they proceed or spring, or by which or in which they are engendered) become organized within more comprehensive dispositions or systems of dispisitions. To say that impulses become organized in systems is an error closely similar to the error of speaking of feelings becoming organized and compounded to form complex feelings, the error whose prevalence all through the nineteenth century prevented all progress in the understanding of affective organization, of the nature of passions, from Kant to Ribot. Why Dewey should choose deliberately this sterilizing way of thinking and speaking of impulses it is not easy to understand. Yet it is clear, I think, that, in all this confused and self-contradictory discussion of habits and impulses, he is concerned with our essential problem, namely, the growth of affective organization which results in the intimate interplay of impulses, their mutual cooperations, their re-inforcements and inhibitions, in a multitude of circumstances.

Dewey, in denying that the impulses of fear (or of anger) experienced and manifested on successive occasions, under various circumstances and in the presence of various objects, have anything in common, beyond their similarity of experienced quality and effects manifested in bodily movements and expressions, is committing the converse of the error made by James when, as we have seen, he dismisses a mother's love for her child as simply an instinct. Close examination of Dewey's discussion reveals, I think, that he is misled, as so many other writers have been, by the colloquial form of speech according to which ‚the fear of thunder' is one thing, and ‚the fear of lightning' another; ‚the fear of dogs' a third; and ‚the fear of snakes' a fourth; and so on through all the list of things which it is possible to fear. This clearly is in accordance with his polemic against ‚a single instinct of fear'; and with his assertion: „There is no one fear having diverse manifestations; there are as many qualitatively different fears as there are objects responded to and different consequences sensed and observed". And in one sense the popular mode of speaking of fears is right. There are people who acquire a lasting ‚fear of dogs', or a ‚lasting fear of this or of that dog'; and such a so-called fear is, it seems clear, just one of those habits, interests, or dispositions of which Dewey writes so fluently and so vaguely, without ever offering us a concrete example of the sort of thing he has in mind.

But in another sense popular speech is in error if it denies, as Dewey does, anything in common between ‚two fears'. Take the case of the person P who has acquired a lasting fear of a big dog B, and another lasting fear of a smaller dog S; two habitual fears which we may call F–B and F–S respectively. In both cases ‚the fear' was acquired through the dog in question (in the one case B, and in the other case S) making on three occasions a savage attack on P. On each of the six occasions, the fear, as an experience and as a system of bodily movements and expressions, was indistinguishable from the fear experienced and expressed on each of the other five occasions; although of course the experience and the expression of fear of each occasion were, numerically and temporally, distinct events. Yet the fear of B (F–B, an enduring disposition in P which makes it impossible for P to meet or to think of the dog B without fear) is distinct from the disposition (F–S) which makes it impossible for P to meet or to think of the dog S without fear.

Are we then up against an insoluble paradox? No, we are merely up against a lax popular mode of speech which, if we are to describe the facts in a manner that will lead to understanding of them, requires to be replaced by a more precise description, a more careful mode of speaking and thinking. That the fear, as an experience and as a highly complex system of bodily reactions, springs on each occasion from the same source, a native disposition to fear, is an assumption; but the assumption is justified by a wealth of biological facts. To deny the validity of this assumption (as Dewey does) is to fly in the face of all principles of biological interpretation. When we see a young bird build a complex nest of the pattern peculiar to its species, we properly say that it is manifesting an instinct common to all members of its species. And when, the following spring, we see the same bird build a closely similar nest, we say properly enough that it is again manifesting the same instinct or native disposition, one which has remained latent, or inactive, throughout the intervening months. Dewey's argumentation would (if it were valid) forbid us to use such language. There are American psychologists who will tell us that on each occasion the bird merely makes a series of movements each of which is a response to some feature of the environment; that there forethe environment determines the train of activity. But the same environment provokes one

bird to build a nest of one kind and pattern, and a bird of another species to build a nest of a very different kind and pattern; and that is the sort of fact which justifies and compells us to accept the assumption of an instinctive nest-building disposition common to one species, and of another similar but differently constituted instinctive disposition common to the other species.

All this seems trivial, because so obviously true; yet these are the truths against which Dewey's polemic is directed and the neglect or perversion of which lies at the root of the failure of so many attempts to understand affective organization, notably the attempt of Ribot.

To go back now to our subject P who has acquired the two ‚fears', F–B and F–S, one for the dog BD and one for the dog SD. How are we to resolve the paradox that the two ‚fears' (F–B and F–S) are in one sense the same, and in another sense distinct? The answer is that in both cases ‚the fear' (the acquired disposition which we call ‚a fear') is complex and consists of two parts which have become linked into a functional unit through the three experiences of being savagely attacked. There is in P one original fear-disposition and one only, a disposition F, given in his innate constitution; just as in the bird there is one highly complex nest-building disposition, and one only, which becomes active in successive building-seasons. And the fact that P recognizes the dog B and reacts to B with fear (while indifferent to most other dogs) proves that he has acquired (by differentiation) a disposition B which enables him thus to recognize and react to BD. And his fear of BD, regarded as an enduring disposition, consists essentially of these two dispositions (F and B) functionally linked in such a way that the activation of B (involved in all perception or other thinking of BD) immediately spreads to F and brings it into action. The same is true of P's fear of SD. It also, considered as a disposition, consists of two dispositions F and S which have become functionally linked together to form one complex disposition FS. Thus ‚the fear of BD' consists of F–B; and ‚the fear of SD' consists of F–S; the two ‚fears' (as dispositions) have in common the one primary disposition F; but they differ in that linked with F in the one case is the highly special cognitive disposition B, and, in the other, the highly special cognitive disposition S. P has acquired the two complex dispositions F–B and F–S, which are identical in respect of the

constituent disposition F, but different and distinct as regards the constituent dispositions B and S. In Dewey's terminology, the fear of BD is one habit in which the fear-impulse has become organized; and the fear of SD is another habit (another fear) in which also the same fear-impulse has become organized. The two fears, as habits or dispositions, are alike in respect of the affective component F (which is identical in the two complex dispositions) and different in respect of their cognitive components, B and S respectively.

Dewey is led to speak of such complex acquired dispositions as habits (and in some slight degree perhaps is justified in so doing) by the fact (1) that such a disposition, once formed, commonly brings about repetitions of the same kind of experience and behaviour (P shrinks in fear from B or S on successive occasions); by the fact (2) that such a compound disposition (such a functional linkage of a cognitive with an affective disposition) is commonly the product of repeated experiences of the same kind, (in our illustrative case, repeated savage attacks by BD and SD evoke repeated fear-reactions to BD and SD). But though both these propositions are true of very many such compound dispositions, neither is necessarily true. A single savage attack on P by the dog B may result in the formation in P of a disposition to fear BD (namely F–B) which however may never again be brought into play, or may remain latent for an indefinite period, and may be brought into play by perception of BD only after the lapse of some long period of months or years. In such cases (in which the essential organization exists in the simplest form) the essential marks of habit are lacking. Such dispositions should therefore not be called habits; and Dewey gratuitously introduces new confusion into the century-long quest by designating them as such; especially when he puts forward as the type of all habit, the maintenance of an habitual posture or bodily attitude.

That this designation does tend to obscure and confuse the problem may be illustrated by relating that I have had to reread Dewey's book three times with the closest attention at intervals of years in order to chieve understanding of his usage of the terms 'habit' and 'impulse', and of his description of habits as quasi-personal entities endowed with all the mental powers of highly intelligent beings, e.g. his statements that habits „consti-

tute the self"; that „character is the interpenetration of habits"; that „habit means special sensitiveness or accessibility to certain classes of stimuli, standing predilections and aversions, rather than bare recurrence of specific acts. It means will".

For all these statements, and many others he makes, are eminently true of the acquired affective dispositions which he calls habits or attitudes. But they are not true of the purely motor habits which are commonly and properly called habits; such habits as habitual postures; or the habits of articulation which make up the peculiarities of a man's speech; or the habit of brushing one's teeth in a certain order; or the habits on which one relies for the detailed control of the car one drives daily throughout many months.

American Social Psychologists on Attitudes

In the last few years there has appeared in American publications a multitude of articles concerned with *Attitudes*. We have seen that Binet used the term ‚attitude' to express in a very obscure and confused manner his dawning recognition of the affective life as something more than merely feeling tones of sensations and ideas. The use of the term by the social psychologists of America seems to have been initiated by Professor W. I. Thomas in his *The Polish Peasant in America* (1918).

We find there: „By attitude we understand a process of individual consciousness which determines real or possible activity of the individual in the social world.... The attitude is thus the individual counterpart of the social value; activity, in whatever form, is the bond between them". These are the least indefinite and most illuminating of Thomas' attempts to explain what meaning he wishes the word ‚attitude' to convey. It seems impossible to gather more than that an attitude is something that has to do with activity and is somehow related to values. Nevertheless, Thomas is widely acclaimed by American social psychologists and sociologists as having introduced a ‚concept' of the utmost value for the development of their science. It is necessary, therefore, to turn to other exponents of the Attitude as a fundamental ‚concept' of social psychology.

I cite a few out of many attempts to give more definite meaning

to the word. Professor Bogardus in 1926 [1]) wrote: „An attitude is a tendency to act toward or against some environmental factor which becomes thereby a positive or negative value". Professor L. L. Thurstone has defined an attitude as: „The sum total of a man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specified topic. Thus a man's attitude about pacifism means here all that he feels and thinks about peace and war. It is admittedly a subjective and personal affair" [2]).

Many others use the word ‚attitude' in an equally liberal manner.

Professor Kimball Young (in his comprehensive and in many respects excellent work, *Social Psychology* [3]) has much to say of attitudes. He begins by accepting Dewey's identification of them with habits. „Habits and attitudes, therefore, are basic for social psychology". The formation of such habits is said to be a process of conditioning; and it is recognized that emotion is somehow apt to be involved in such processes. „It is clear that emotional accompaniments, under intensity of stimulation, often enhance the new connection.... Emotional-affective states profoundly influence the process of conditioning. This is highly important in building up social habits and attitudes". And throughout the book the phrase ‚habits and attitudes' recurs so constantly as to suggest that the author is not content with his identification. This is, perhaps, explained by the statement that: „The attitude is a form of incipient habit;.... the attitudes, being incipient motor habits, are the key to the final activity". Again on a latter page: „Attitudes in the narrow and more specific sense are essentially motor sets of the organism toward some specific or general stimulus.... In fact, the attitude partakes of the nature of an incipient reaction. It is fundamentally a form of anticipatory behaviour.... Likes, dislikes, avoidances, approaches, withdrawals, appreciations, hatreds, and loves are fundamentally the core of attitudes, as these are directed to various situations. The attitude marks the inception of behaviour towards situations It gives direction to it.... Attitudes are really forms of habit and

---

[1]) *Fundamentals of Social Psychology.*
[2]) American Journal of Sociology, 1928, vol. XXVIII.
[3]) New York, 1930.

bespeak one's actual trends in conduct better than do the verbalized rationalizations which we call opinions. Attitudes thus offer a clue to the unraveling of human motives". But we are never informed how attitudes may be observed. (p. 138).

Again, we are told that there are three basic emotions, rage, fear and love, and that „emotions in later life are definitely conditioned to specific and general situations of all sorts. The emotions of grief, remorse, horror, hatred, pity, love, and shame are frequently linked up with ideas, attitudes, and habits which have taken years to develope". He writes also of „the individual constructing more or less permanent dislikes or anger attitudes toward the object of his anger"; and of „the chronic form of anger which we call hatred". Again love and hatred are spoken of as „socially- conditioned response systems".

Perhaps the most illuminating statement is the following: „We have been conditioned into attitudes of mutual aid, of loyalty, of patriotic responses to the symbols of the group, the flag [1]), the insignia, and the printed code. Still, there always lie within us certain antagonistic attitudes. The more deeply emotional are those of rage, and fear, toward the outsider or the stranger, toward the divergent person and his group. In contrast we are conditioned to love those of our own family, class, community, religion, or nation. Our ego is constructed out of this mixture of aggressiveness and superiority of our own group and its values, and an ambivalent set of attitudes opposing the other group and denying their values" (p. 523). I have cited all the passages which seem to have bearing on our problem.

I turn to what is perhaps the best discussion of ‚attitudes' hitherto published, that of Professor G. W. Allport [2]).

Allport begins by saying that „the concept of attitude is probably the most distinctive and indispensable concept in contemporary American Social Psychology". „Attitude connotes a neuro-psychic state of readiness for mental and physical activity.... Love of money, desire for fame, hatred of foreigners, respect for a scientific doctrine, are typical attitudes.... For the explanation of prejudice, loyalty, credulity, patriotism and

---

[1]) It must be remembered that in America squads of little foreigners are drilled to cheer the Stars and Stripes.

[2]) In the *Handbook of Social Psychology*, 1935, published by The Clark University Press.

the passions of the mob, no anaemic conception of attitudes will suffice.... In contemporary literature attitude has a wide range of application from the momentary mental set, or *Aufgabe*, to the most inclusive and permanent dispositions, such as a philosophy of life".

„How does one know that they exist at all? Only by necessary inference. There must be something to account for the consistency of conduct. It is the meaningful resemblances between activities and their congruence with one another that leads the psychologist to postulate some such generalized forms of readiness as the term ‚attitude' denotes. These forms of readiness must not be thought of in absolutistic singular terms.... They are dispositions whose boundaries are indefinite, and whose independence of one another is only relative.... If they did not exist as fairly organized and coherent dispositions in the mental life of each individual, it would be impossible to account for the patent stability and consistency in human conduct.... The classification of attitudes is an impossible task".

The full definition reached by Allport runs as follows: „An attitude is a disposition to act which is built up by the integration of numerous specific responses of a similar type, but which exists as a general neural set and when activated by a specific stimulus results in behaviour that is more obviously a function of the disposition than of the activating situation". And as alternative definition he offers: „An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's responses to all objects and situations with which it is related".

In describing an attitude as a ‚general neural set', Allport finds support in ingenious experiments made by his pupil, Dr. Hadley Cantril. These experiments were provoked by, and suffice entirely to refute, the remarkable and impossible conclusion drawn by Drs. Hartshorn and May from a very extensive course of experimentation, the conclusion namely that the common assumption of general qualities of persons (such as are implied by such words as honest, courageous, trustworthy, prudent) are illusory; that the conduct of any person shows no such consistencies as Allport mentions as the ground of postulation of attitudes [1]).

[1]) Hadley Cantril — *General and Specific Attitudes*, Psychological Monographs. No. 192, 1932.

The conclusions of Hartshorn and May which are refuted by Cantril's experiments seem to have been dictated by the old-fashioned theory which in America is known as ‚connectionism'. It is therefore of some interest to note what Professor E. L. Thorndike, who for nearly forty years has been the most influential exponent of ‚connectionism', has to say on the nature of attitudes in his latest volume [1]).

Thorndike does not much concern himself with the question of the meaning to be evoked by the words *wants*, *interests* and *attitudes*. Rather, taking these words as standing for something sufficiently familiar to all readers, he is concerned to present the results of a number of ingenious experiments directed to throw light on two questions defined as: (1) the ways in which their potency operates — the ways in which they stimulate and guide thought and action; (2) the ways in which they are strengthened, weakened, and shifted in their attachments [2]). Nevertheless it is possible to gather some slight indications of what Thorndike means by these words. He does not distinguish between them but uses them as three almost synonymous terms. In his opening paragraph he adds a fourth term, namely ‚emotion', and remarks that the term ‚drive' is often used to refer to all four of these considered as active forces. And he distinguishes them from sensations, percepts, images, ideas, movements and acts.

Attitudes, then, are for him *active forces*, and they are none of these other things; and his study is of the dynamics of these forces. They have great potency in directing the course of ideas and acts. Thinking and acting occur largely in the service of these forces and are guided by them.

But an attitude may also be considered as quiescent, latent or potential. The influence of an attitude is twofold. It works forward to evoke behaviour and it works backwards to alter the nature of the animal; and it may undergo changes in the course of its operations. Thorndike makes the cryptic remark that there need be nothing teleological about an attitude or its working. Yet later he identifies attitudes with purposes; and it is clear that his expression *forward action*, and other similar expressions imply

[1]) *The Psychology of Wants, Interests and Attitudes*. New York. 1935.

[2]) In view of the menacing publishers' notice in Thorndike's book about reserved rights, I dare not use inverted commas or cite any passage quite accurately, not even the publishers' notice, nor even the name of the firm. I will only remark that this sort of thing is becoming a serious nuisance, a clog upon scientific work of all kinds.

a cryptic recognition of the goal-seeking or teleological nature of human and animal activity; his frequent use also of the term *relevance* has the same implication [1]).

Putting such statements alongside others to the effect that all wants and attitudes *somehow develop from original or native propensities* (p. 15), and such expressions as *original unlearned wants* and *instinctive wants*; alongside also his repudiation of *random* movements as of any importance in the process of development (p. 13), and of the ideomotor theory of action (p. 81), and of the associative efficacy of mere temporal contiguity (p. 195), it becomes clear that Thorndike has, at long last, come very near to acceptance of the hormic principle, that which sees in native urges, impulses, instinctive propensities, conative dispositions, or what the Germans call *Triebe* and the French *tendances*, the energy-sources of all activities [2]).

Thorndike's *attitudes* remain very obscure entities; yet we may fairly say that they are of the nature of dynamic dispositions, which supply all the principal energies and forces expressed in human behaviour; and that they are in part native, in part acquired by the individual.

Summary on Attitudes

It is, I think, fair to say that, as used by the social psychologists of America (and, indeed, also by Binet, by Thorndike and by the members of the *Gestalt* school) the word *attitude* expresses little more than a dawning recognition of the facts of conation. The general psychologists were able for the most part (under the strongly mechanistic influence of the natural sciences of the nineteenth century) to ignore the facts of conation. But, as soon

---

[1]) Thorndike (like many others) seems to be under the impression that *teleological* as applied to any organic process means one which will result in benefit to the organism. It is very unfortunate that Thorndike, with all his originality, ingenuity, force and prestige, seems never to stop to enquire into the meanings of the words he uses. Like the man in the street, he is content to use, without examination, the words he is familiar with: and in this, of course, he is consistent; for meanings have no place in his connectionist psychology. If Thorndike would stop to ask himself what he means by *relevance*, he would discover that *relevance* has meaning only in relation to purpose; and then he might go on to discover that the word *purpose* is meaningless in all discourse which strictly rules out teleology.

[2]) The seed of appetitive behaviour is said to be the action of original wants working „forward". This strange clumsy expression is one of many similar ones used by Thorndike — notably *belongingness*.

as the psychologist turns to the more concrete field of human life as actually lived in social groups, the conative aspect of human activity, the constant striving towards goals, becomes so obvious and insistent that it breaks through such strong prejudices and demands recognition. The use of the word ‚attitude' does little more than mark this recognition.

A few, like Allport, have gone further in recognizing the dispositional nature of *attitude*; and Thorndike and Kimball Young recognize also, however vaguely, that, somehow and in some sense, some of the dispositions which they call attitudes are in part at least composed of or derived from native dispositions.

The British Psychologists

The British moralists are a numerous tribe, to whom the psychologists of the association-school were content to leave the problems of character and volition, to be dealt with under the head of moral psychology. This has contributed greatly to bring about an unfortunate state of affairs which still prevails among British and still more among American psychologists; namely, the opinion that psychology does not and should not concern itself with problems of conduct and character; and that any psychologist who does so labels himself as unscientific and lays himself open to the reproach of being a philosopher or even a metaphysician. That is because the positive and the normative problems of conduct or behaviour have commonly been treated of together in the most inextricable confusion: for it has not been clearly seen that the strictly scientific enquiry into the grounds of action and into the structure and growth of character is, or should be, entirely independent of all consideration of ethical, normative, or moral problems; which latter must and will remain as the proper problems of philosophy, no matter how nearly complete may be the solution of the positive or scientific problems.

In all the discussions of the British moralists we seek in vain any clear recognition of the problem of affective organization. The famous Adam Smith wrote a famous treatise, *The Theory of the Moral Sentiments*, the title of which might well lead one to expect to find in it some discussion of our topic. But a careful reading reveals no clear recognition of it. The word ‚sentiment'

is used only in the French sense of the same word, that is to say as a synonym for the word ‚feeling'. Or since, until the latter part of the nineteenth century, the latter word was commonly used in British psychology as the most general term to denote all the so-called elements of consciousness (including the ‚sensations') it is more accurate to say that the word ‚sentiment', as used by Adam Smith, was the equivalent of the word ‚feeling' in its more modern usage, covering feeling proper, or pleasure and pain in all their combinations and varieties, as well as all emotions regarded as qualities of experience.

Some of the Scottish philosophers, notably David Hume, A. Ferguson, and Dugald Stewart, made some obscure and confused recognition of the facts we are dealing with, but contributed little to the understanding of them.

Bentham and James Mill were wholly given up to their strange mixture of pure associationism with hedonism (two doctrines as little capable of being blended as oil and water). It was in reviewing his father's work that John Stuart Mill seems to have made the discovery that this traditional English psychology ignored half, and the more important half, of the problems confronting any would-be science of human nature. It was in the light of this discovery that he proposed, not a radical reform of psychology, but the supplementation of psychology (the empirical and inductive science of mind, as he called it) by another science still to be created, a science of character to be called Ethology [1]). This proposal remained quite sterile, because falsely conceived and embedded in an utterly misleading and fallacious discussion of the logic of the two sciences, psychology and ethology.

Herbert Spencer's discussion of the emotional life may perhaps be regarded as the high-water mark of the endeavour to deal with the affective life in terms of the principles of the associationist school. And his famous discussion of sexual love reveals the hopelessness of the task he undertook. Just as he described fear as a sum of all the ‚elements' of past painful experience associated with a given object or situation, so also he described love as a vast and quite incredible conglomerate of elements of feeling of the most various kinds. Like his European contemporaries from

[1]) Virtually a science of individual differences; called deductive, because it was proposed to deduce all the possible differences, between one man and another from empirically ascertained laws of mind.

Herbart to Wundt, he could not begin to describe the enduring structure of the mind, because he postulated no materials other than fleeting elements of experience, atoms of sensation and feeling of which the structure might be built up.

Alexander Bain was the Czar of British psychology during the later decades of the nineteenth century [1]). His volume *The Emotions and the Will* [2]) is written in a pompous and didactic style, with an extreme lack of consistency and precision, which makes it very difficult to say just what Bain did or did not teach. His foundations were associationism and hedonism. For him, emotions have objects and goals and are, in part, treated as active goal-directed tendencies, in a manner perfectly irreconcilable with the dogmatically asserted hedonist principle of all action: and yet they are formally treated as „secondary, derived or compound feelings" à la Herbert Spencer. Bain, also, in spots, recognizes instinctive impulses. The classification of emotions is elaborate, but can only be described as a vast and whirling confusion. He makes some attempt to differentiate the terms feeling, emotion, passion, sentiment and affection, all of which are freely used.

Emotions are compound feelings; and sentiments are compound emotions (or, as Spencer would say, re-compounded or re-representative feelings); examples of the latter cited are the Tender Emotion, Sexual love, the Irascible Emotion, and the Moral Sentiment; and we are told: „the fusion of elements in these cases being such as to make them appear simple feelings, until analysis shows them to be compound. The sentiment of Property is a remarkable case of aggregate feelings". (p. 35).

In one chapter, Bain starts out on an enquiry into benevolent affections; but the enquiry is at once rendered sterile by his obstrusive hedonism; he speaks of warm attachments and tender sentiments, and forthwith resolves them into desires for the pleasures of contact.

Passions are violent emotions. How far Bain was from any recognition of the facts is indicated in a comment he makes in reviewing, in an appendix, the doctrines of Herbart. For the latter, he says, „Passion is a fixed predominant disposition

---

[1]) A rule which did much to bring about the virtual exclusion of psychology from the English Universities for some two generations.

[2]) First Edition, 1859. Second Edition, 1865.

towards a certain kind of desire, that refuses the control of Reason". Bain's comment is: „This distinction is to me a quibble; it would not exist but for the arbitrary repetition of the very same states under the heading of Desires. Moreover, any one of the so-called affections rising to intensity, in my opinion does everything that characterizes passion". Bain thus throws away the one cue to progress in this field, the indispensable notion of an affective disposition of some kind, the total lack of which in Bain's pages is a chief ground of their obscurity and confusion.

The next important figure in British psychology is James Ward. His system, as set out in his article in the British Encyclopaedia, while it cannot be called associationism, is nevertheless a psychology of ideas or presentations. A presentational continuum, the main mass of whose members are subconscious, is the substance of mind; and activity is hedonistically explained. In such a system there is no room for conative or affective dispositions. Accordingly, when the article was expanded into a large book the *Psychological Principles* (1918) Ward added some chapters largely concerned with *Anlagen*; but he did not succeed in fitting these into the picture he had drawn so carefully many years earlier. Our topic consequently receives little attention and no illumination.

The Contributions of G. F. Stout and of A. F. Shand

Professor G. F. Stout, happily still active, was a pupil of Ward; but diverged widely from him under the influences of Herbart and of Bretano and of his own admirable perspicacity. In his first book, the *Analytic Psychology* of 1896, Stout's principal contribution was an account of mind as a vast system of dispositions undergoing perpetual growth and differentiation in all mental activities. Conation is fully recognized and acutely discussed; but little is said of its roots in our native constitution, and specifically conative or affective dispositions are not distinguished.

Next came Stout's *Manual of Psychology* (1899) a work so different from the former book that the casual reader would hardly notice the essential resemblances. The all-pervading role of conation is further developed with acute insight; and the dependence of feeling on conation is displayed, though with

some vacillation; and still there is no postulation of affective dispositions. And although the book is written from the genetic standpoint, there is less discussion of the growth and differentiation of dispositions and systems of dispositions than in the earlier book.

In 1903 Stout published a small but comprehensive survey *The Groundwork of Psychology*. In the opening chapter he insists on the postulation of dispositions as indispensable. The psychologist is „compelled at every step to recognise the existence of what are called psychical or mental dispositions, inherited and acquired". Our actual experience at any moment is largely determined by „the abiding after-effects left behind by prior experiences"; notably in all cases of recognition. „This residual after-effect is an acquired disposition. Again, what are called in ordinary language friendship and enmity are acquired dispositions of a complex character rather than actual psychical processes. Friendship involves such actual psychical processes as being glad at a person's prosperity, grieved at his misfortune, rejoiced to meet him, sorry to part from him, and so on. But these psychical states are merely partial and transient manifestations of the permanent friendly disposition. This is the abiding condition of these varying phases of actual emotion".

Stout gives a few words to the question whether the mental disposition can properly be regarded as „a permanent modification of the substance of the brain"; and very properly leaves the question open.

Next, in a chapter on association, we are told that „Association is an acquired connexion of dispositions, and, like the dispositions connected, it is formed in course of conscious experience, and it is a condition determining subsequent conscious experience. But as the dispositions themselves fall outside of conscious experience, so their union falls outside of conscious experience". Here at once is a simple and obvious improvement upon „the association of ideas", which, if only it had been clearly formulated a century earlier, might have vastly accelerated the progress of psychology.

Passing to the chapter on Emotion, we note that „emotions are subjective attitudes toward an object", and the typical varieties of emotion are each connected with certain characteristic directions of conation or trends of activity. Thus, anger involves a

tendency to destroy and forcibly break down opposition.Stout's chapter on emotion is very brief, but is followed by one on *The Sources of Tender Emotion*, written by A. F. Shand, which Stout, by implication, accepts. There we read that „the emotions have complex tendencies. By their ends you may trace their presence in the most unstable combinations where their feelings cannot be detected. Leave their feelings to their natural vagueness; define them by their ends". The greater part of the chapter is then devoted to the attempt (entirely unsuccessful in my opinion) to show that tender emotion is always in some sense a blend or fusion of joy and sorrow, which latter, in accordance with a well-established tradition deriving from Descartes, are regarded as primary and simple emotions. But we find one important contribution to our topic, which is of the first importance and for which Shand deserves all credit. Discussing love, which every preceding writer had described as a feeling or an emotion, simple or complex, Shand writes: „No emotion can sum up love, nor can it be contained in any simple pulse of consciousness. Love is always an emotional system".

At this point Shand refers to an article published by him in 1896 [1]). And as this articles is of great importance and historical interest, we turn to it, remembering that it ante-dates by ten years Ribot's valiant failure to solve the problem — What is a passion [2])?

Shand begins his article by rejecting (mistakenly, as I think) the common distinction between character and intellect ,on the ground that „all three elements cognitive conative and feeling elements contribute to its formation". It is, we are told, a cardinal problem of the science of character „to construct a classification of the various sentiments, emotions and appetites or, since these may all be regarded as tendencies, to construct a classification of tendencies".

A large part of the article is concerned with „The Origin of the Emotions in the Sentiments". Here we read: „The terms sentiment, interest, and affection, do not seem to mark any important difference. We speak of the sentiment of justice, truth, and the moral sentiments generally, of the sentiment of friendship; but of affection for our friends rather than sentiment,

[1]) *Character and the Emotions. Mind.* N. S. vol. V.
[2]) Cp. This article p. 000.

and of interest in our health or business, rather than either. The difference turning upon what we are not considering at present, the different character of the object. We shall then use the term sentiment in a broad sense to include what with more propriety we call affections or interests".

Further: „The emotions tend always to build themselves into more stable and complex feelings; and these are the sentiments which in their turn become the centres of attachment of the organized emotions". And: „When the sentiment is developed out of sensations of pleasure and pain and specific emotions, it has acquired out of the blending of so many experiences a flavour and a character of its own". In the two fore-going passages we note the perpetuation of the usage of the word 'sentiment' common to Adam Smith, Herbert Spencer, and Bain, namely, as denoting highly complex forms of feeling or emotion. Yet the description of the sentiment as feelings that are not only more complex but more *stable* than the emotions points to an important truth; for mere increase of complexity does not naturally or necessarily bring increase of stability.

Shand goes on to speak of „the specific organisation of our sentiments" and to say that sentiments „so far from being mere adjectives and qualifying other feelings, are the relatively stable centres to which the first [the feelings and emotions] attach themselves, the substantives of these adjectives, the complex wholes which contain in their possible life-history the entire gamut of the emotions.... In the love of an object there is pleasure in presence and desire in absence, hope or despondency in anticipation, fear in the expectation of loss, injury, or destruction, surprise or astonishment in its unexpected changes, anger when the course of our interest is opposed or frustated.... And the series of the emotions occurs, now in one order, now in another, in every sentiment of love or interest, when the appropriate conditions are present.... The sentiments are the ground of the organized emotions, the reason why we feel this or that emotion in these circumstances".

„The sentiments organize within their complex systems, not merely the thought which subserves their ends, not merely the series of emotions which are excited in them, now blended together, now in succession, but also and in different proportions other and subsidiary sentiments".

These are the passages which throw most light on Shand's conception of the sentiment at this stage. They show that, while still using the language of his British predecessors in the main, he is groping his way to something more useful than the mere highly composite feeling; something that is not only complex, but also enduring and highly organized; something, in fact, dispositional in nature. Yet at this stage Shand makes no mention of dispositions; and we are left asking — What is it that enters into these organizations, such as love and friendship and patriotism? What are the components that become thus united in such enduring systems?

Stout is a much clearer and more perspicacious thinker than Shand; and we turn with hope of further illumination to his chapter *Development of Sentiments* which follows immediately the chapter contributed by Shand. And we are not disappointed. The whole of this short chapter might well be cited here, so important is it in the development of the understanding of our topic. I draw attention again to its date of publication (1903); four years earlier than Ribot's *Essai sur les Passions*. „An object" says Stout (and it is significant that he begins with *the object*, rather than with a feeling) „which has been connected with agreeable or disagreeable activities, which has given rise to manifold emotions, which has been the source of various satisfactions or dissatisfactions, becomes valued or the opposite in and for itself. It becomes liked or disliked, loved or hated, for its own sake". After writing of the growth in a child of love for its mother, and love for a toy, Stout adds: „The child's love for his mother or his toy exemplifies what for want of a better name we may call a sentiment"; and he proceeds to justify this designation as already partially and obscurely used in common speech.

And then Stout utters *das erlösende Wort*: „Sentiments are dispositions, not actual feelings. A sentiment, as we have defined it, cannot be actually felt at any one moment, as emotions can be felt. Its relation to emotions, conations, pleasures, and pains, as actually felt is twofold. On the one hand it develops out of them.... On the other hand sentiments, when they have come into being, are themselves independent sources of manifold feeling-attitudes and conations, varying with varying circumstances. They are complex mental dispositions, and may, as

divers occasions arise, give birth to the whole gamut of the emotions".

„Sentiments may be conveniently though very roughly classified as concrete or abstract. The concrete have as their objects, individuals, or groups of individuals united in some kind of whole. The child's love for his mother is concrete in this sense. abstract sentiments, on the other hand, have for their objects some general feature .... [i. e. some abstract object]. Love of power, of fame, of justice, of truth, come under this head".

Here at once is the solution of two riddles. We have seen already how Ribot (and others) struggled vainly to classify ‚the passions', and decided that ‚the passions' cannot be classified: that was not only because Ribot confused together things of essentially different kinds under the word *passion*; but also because he did not keep his eye on the object, and lost it from view.

The other and more ancient roddle is — What was meant by the multitude of psychologists and philosophers who for centuries past have written about ‚abstract feelings'? They never told us what they meant; and the critical reader was always left asking. — How can one feeling be more or less abstract than another? Surely all feelings as modes of experience are equally concrete! And now comes Stout and in two words clears up this ancient mystery. What was meant by ‚an abstract feeling' was ‚a feeling for an abstract object'.

It may be said — It was merely a laxity of language on the part of the older authors. Precisely! But fully half the puzzles and perplexities of psychology arise and persist through just such laxity of language, which reveals corresponding laxity of thinking.

Stout concludes this chapter, as illuminating as it is brief, by mentioning sentiments for groups, such as the family and the nation, as forms of concrete sentiments; and adding two pages on self-love and its varieties; and half a page on the ‚abstract sentiments': „Self-love which, when it passes certain bounds, is called selfishness, must be classed as a concrete sentiment having an individual for its object.... Pride, vanity, love of power and distinction, and love of fame are one-sided developments of self-love.... Each has for its object a certain general aspect of the life of the self". Among abstract sentiments, he mentions

hatred of injustice, devotion to the cause of science, or art, or religion, the love of order, the detestation of servility.

Stout's all-too brief discussion of sentiments, rich in illumination as it is, leaves us still asking the fundamental question: If sentiments are complex highly organized dispositions, how are such dispositions formed? What are their components? Are they not formed by some composition, some bringing together and linking together of simpler dispositions? And if so, what are the simpler component dispositions which become linked to form the complex system which is the sentiment? These questions Stout does not explicitly raise; and his system, as it then stood, afforded no clear indication of an answer.

The Contribution of McDougall

In 1908 McDougall published his *Introduction to Social Psychology*, a work which endeavours to apply in some detail, to the elucidation of the organization of our affective life, the new cues given by Stout and Shand, more especially, the theory of the sentiments, which seemed to him to be a novelty of the first importance. It was difficult at that time to distinguish between the contributions to the problem of these two authors, since they had worked cooperatively. It is to be noted that Ribot's *Essai sur les Passions* was published while McDougall was writing his book and had not been seen by him; though he had learnt much from Ribot's earlier book, *The Psychology of the Emotions*. He had in the main accepted the teaching of Stout's three psychological books, regarding these as the highwater mark of psychological theory up to that date; and he attached the highest importance to all that Stout had written of conation [1]).

It seemed clear to McDougall that the credit of drawing the valid and important distinction between, on the one hand, emotion as a mode of experience and, on the other hand, the sentiment as a complex disposition, a structural unit, was Shand's. For, in his article of 1896, the distinction, though somewhat obscured by laxities of language, was undoubtedly

[1]) I take this opportunity to confess that hitherto I have not made sufficient acknowledgment of my debt to Stout. It is perhaps an instance of a not uncommon failure; the failure of the pupil fully to recognize the extent of the enlightenment which he has derived from his master.

made; and Stout's very brief chapter on the sentiments did but clarify and establish it, and give the term *'sentiment'* more definite denotation and connotation. But perhaps Stout's essential contribution to the topic was the more fundamental and may be supposed to have led Shand to the achievement of the distinction: namely, Stout had sketched (in his Analytic Psychology and his Manual) the broad outlines of a thoroughly dispositional account of the structure and growth of the mind.

To McDougall it seemed that what was lacking in Stout's system, and what was chiefly needed for the completion of it in broad outline, was some account of the native basis of the mind; a problem of vast importance on which Stout had barely touched. Locke's doctrine of the *tabula rasa* had long prevailed and had dominated the schools of Herbart and of the English Associationists alike; for both schools, *ideas* were virtually the substance of the mind, and *ideas* were acquired by each individual by way of impressions of sense upon the smooth wax of the *tabula rasa*.

What chiefly had made this antique theory untenable was the rise of biological theory, with Darwin's convincing demonstration of the continuity of evolution and of the many essential similarities between men and animals in their mental, no less than in their bodily, constitution. Lloyd Morgan and L. T. Hobhouse were emphasizing these mental similarities and showing the importance of the comparative method in psychology. James had written his convincing chapter on the instincts of the human species; but without fitting the instincts into the general framework of human psychology.

Now the instincts, being inborn or constitutional factors common to the whole of the species, could only be conceived as dispositions, undergoing spontaneous maturation, but lying latent as potential energizers, each one awaiting the touch of appropriate sense-impressions to bring it into action.

Here, then, were some at least of the native dispositions forming the native basis of the human mind, and making it at birth very different from Locke's *tabula rasa*; some at least of the native dispositions which were logically implied in Stout's system but never enquired after or explicitly recognized by him. *The problem was to synthesize the teachings of James and of Stout*, the thoroughly biological and physiological teaching of James, the professor of physiology (especially his doctrine of the instincts as

energizers and of the emotions as systems of bodily innervations) with the much more systematic and logically ordered system of Stout, the philosopher, with his penetrating insight into the all-pervasive influence and fundamental role of conation in all mental life and his account of mental structure as a system of dispositions ever growing and differentiating and becoming organized in more and more complex systems.

It seemed to McDougall that an essential first step was to define, more strictly than James (or any other author) had done, the nature and the number of at least the principal instincts common to the human species; that when, and only when, this should have been done, would it be possible to develope further Stout's dispositional account of the mind's structure, especially on its much neglected side of character (Stout's discussion in his Analytic having been mainly concerned with the growth and organization of intellect).

James' account of the instincts of man seemed to McDougall to be defective in three important respects. First, James had been too much influenced by the traditional naturalist's view of the nature of instinctive action, the view based mainly on observation of the lower animals. For the relatively stereotyped character of their behaviour had led the naturalists to regard instinctive action as typically and always the execution of some train of movements rigidly prescribed by nature, a view which (when combined with the theory of instinctive action as compound reflex action, unconscious, mechanical and unvarying) had hardened into a dogma so plausible as to secure almost universal acceptance; and which still is very prevalent. Under this influence James had classed as expressions of instincts every useful coordinated mode of movement which is manifested by the members of any species without a long process of learning. Accordingly all the usual modes of locomotion of men and animals, walking, running, creeping, climbing, etc., were regarded each as the expression of a corresponding special instinct. It seemed to McDougall that this was a grave error, and that other and more trustworthy criteria of truly instinctive activities were needed. Instinctive action seemed to him purposive in some lowly sense, teleological or goal-directed, and not rigidly stereotyped but flexible and adaptable to a degree corresponding with the degree of intelligence of the creature. The neglect of such goal-

seeking or goal-directedness, as the most essential character of instinctive action, seemed to be James' second error.

His third error concerned the subjective aspect of instinctive activities. James, as well as Ribot, H. R. Marshall and Lloyd Morgan had dwelt on the intimate relations between instinctive action and emotion. But none of them had quite formulated the view which seemed to McDougall obviously true; namely that each form of truly instinctive activity, when it is evoked at a high level of intensity, involves a general excitement whose quality in each case is specific to that form of goal-seeking behaviour; and that such general excitements of specific qualities are what may properly be called the primary emotions; that, in short, each primary emotion is the experienced total excitement peculiar to the goal-striving evoked from some one instinct. James had not only just fallen short of making this generalization, but also he had denied at great length the conative experience, the felt impulse toward a goal, which is a part or aspect of all such emotional excitement as results from the bringing into strong action of an instinct.

To McDougall it seemed that when these defects of James' account of instinct were remedied, we should have in this simple one-to-one relation between the instincts and the primary emotions of any species, a very helpful clue to the determination of both the primary emotions and the instincts of man.

With the aid of this clue McDougall proceeded to define anew the principal instincts of man and the corresponding primary emotions. In place of James' fifty or more instincts, he could find clear evidence, according to the reformed principles, of only some dozen of human instincts, with the reservation that probably a rather larger number might ultimately be recognized.

The many forms of unlearnt bodily movement which James had attributed each to its own instinct, McDougall regarded as manifesting merely innate motor coordinations or mechanisms devoid of all independent impulsive, conative, striving, or goal-seeking power; which motor mechanisms are liable to be activated or brought into play in the service of all or many different instincts, as notably the locomotor mechanisms proper to any species.

Then, with a rashness of which only a young man is capable, McDougall propounded, definitely and clearly for the first time,

a principle which at a later date he has proposed to call the *hormic principle*. It was concisely formulated in one half-page which has been cited by many scores of authors, and of which only the most essential sentences need be reproduced here: „The instinctive impulses determine the ends of all activities and supply the driving power by which all mental activities are sustained; and all the complex intellectual apparatus of the most highly developed mind is but a means towards these ends, is but the instrument by which these impulses seek their satisfactions, while pleasure and pain do but serve to guide them in their choice of means.... these impulses are the mental forces that maintain and shape all the life of individuals and societies, and in them we are confronted with the central mystery of life and mind and will" (p. 38).

The next step was to distinguish the affective dispositions from the cognitive. It was clear that, in purely instinctive action, the first phase of the total cycle of activity is commonly the perception of an object or situation of specific nature. Such perception implies a preformed cognitive disposition, and this must be linked with the conative disposition whose excitement is the instinctive striving.

Here McDougall made a mistake which, if not an actual error, was at least a tactical mistake and a premature distinction. He proposed to distinguish in the total complex innate disposition which is an instinct, besides the indispensable cognitive part, two other parts namely an emotional or affective part and a motor or conative part. This was to go beyond the warrant of the facts and the requirements of theory.

He should have been content to distinguish in each instinct two parts, a perceptual or cognitive disposition and an affective disposition which is both emotional and conative, which on its excitement by way of the cognitive disposition determines or yields both emotional and conative effects, both the emotional quality of the experience and the felt impulse to action [1]).

[1]) This rectification he has made in later publications, more especially in his *Energies of men* (1933). See also p. 79. The psychological evidence justifying the analysis of the instinct into these two parts was abundant: but McDougall, trained as a physiologist and having made intensive study of the nervous system, was able to support it by pointing to evidence on the side of neurology and comparative physiology. Like Stout, he preferred to regard as an open question the possibility of translating all psychological facts and inferences into terms of neural structure and function; but he could point out that a vast amount of varied biological evidence indicated that, while the neural correlates of the cognitive dispositions must, as usually assumed, be sought in the cerebral cortex, those of the

The complex innate disposition which is an instinct having been analysed into at least two relatively independent parts, a cognitive and an affective disposition, the requisite material was at hand for an account of the development of intellect in terms of cognitive dispositions in *relative abstraction* from the affective, and of character in terms mainly of affective dispositions in *relative abstraction* from intellect.

This distinction and separation (as functional and structural units) between the cognitive and the affective dispositions (the latter being phylogenetically very much older than the former) had never been clearly made; yet it seemed fundamental for all understanding of the organization of the affective life, and especially for the understanding of the formation, through the experiences of individuals, of those complex unities which Stout and Shand had proposed to call *the sentiments*, the loves and hatreds, the lasting likes and dislikes, the enduring devotions and aversions, peculiar to each individual.

For, as McDougall pointed out, such formation seemed in each case to consist in the functional linkage of an affective disposition with some cognitive disposition not natively linked therewith. He pointed to the formation of such simple rudimentary sentiments in animals as a principal mode of their profiting by experience, as when an animal learns to fear this or that kind of object (acquires e.g. the fear of man) or (in the case of the higher animals) learns to fear an individual man or becomes enduringly attached to a particuliar object, as to his human master, to his mate, or to some place or thing. Further, it seemed obvious that such an enduring linkage (or association) was often formed (by men and animals alike) through some single vivid emotional experience; but commonly was strengthened and confirmed by repeated experiences of the same kind.

In respect of such formations the difference between men and animals seemed to be, not only that man learns to distinguish a vastly greater number of kinds of objects and individual objects, but also that, while in the animal *the sentiment* commonly remains relatively simple in constitution, in man the sentiment

---

affective dispositions must be located, mainly at least, in the thalamic region of the brain; a conclusion which has been abundantly borne out by later additions to our knowledge of the functions of the nervous system; more especially those we owe to Sir H. Head and Professor W. B. Cannon.

for any object (or kind of object) may become very much more complex through the linkage with one cognitive disposition (corresponding to any one object) of two, three, or more affective dispositions. This complexity of the sentiments formed by man seemed to be the ground of the extreme complexity of his affective experience, and to be the indispensable cue for the analytic interpretation of those complexities. For the more complex emotions, such as reverence, (involving subtle blendings of the qualities and tendencies of several of the primary emotions) can be evoked in a man only by objects for which he has previously acquired complex sentiments.

Sentiments, then, or individually acquired cognitive-affective dispositions, are the material, the substance, the functional units of character. But they represent only a first level of organization, a level above which the animal and the young child do not rise. But the formation of character involves a higher level of organization, the intregration of all the sentiments in one hierarchical system; in which system the dominating position is in most cases occupied by and the controlling function exercised by, the highly complex sentiment peculiar to man, the sentiment of self-regard in all its protean forms, self-respect, pride, vanity, ambition, etc.

Such was the substance of McDougall's book, his first effort to develop and apply the cue furnished by the theory of the sentiments which, at that date, had been briefly sketched by Stout and Shand. The book has seemed to meet a felt need. For twenty-three English reprintings and thirteen American have been called for [1]). But it was obvious that, even if its contributions were accepted as in the main true, there remained a number of problems of affective organization still to be dealt with.

In 1912 was published McDougall's *Psychology, the Study of Behaviour* [2]). In a chapter of this little book, he sketches a more complete outline of the structure of the mind and its development. And the part of that sketh concerned with the affective life is cited here as the best summary statement of the position then reached.

„We have briefly indicated the nature of the cognitive and of the conative structure of the mind. It remains to describe equally

[1]) As well as editions in various foreign languages.
[2]) Volume 49 of the Home University Library.

briefly the relations between these two sides. These relations seem to be in the main of the nature of associative links, a complex system of cross-connexions between the dispositions of the two kinds. In order to illustrate the formation of such cognitive-conative associations and their influence upon the course of mental life, we may revert to the case of anger roused by an insulting blow and restricted in its expression by fear. Up to the time of the incident, I had been, we may suppose, as nearly as possible indifferent to my assailant; that is to say, his presence had evoked in me no well-defined feeling or attitude. But, after the painful incident, I cannot think of him without fear, or anger, or both, and without desiring both to avoid him and to get the better of him in some way. Suppose, now, that circumstances repeatedly bring us together, and that his behaviour on such occasions is that of a bully covertly reminding me of the past insult that I dare not avenge. My attitude of blended anger and fear is renewed on each such occasion; and, being thus confirmed and rendered permanent, it becomes a full-blown sentiment of hatred. What development of the structure of my mind is implied by the growth of this sentiment? The emotion and impulse of anger and the specific bodily expressions and activities in which the impulse finds, or tends to find, vent, imply the possession of a complex conative disposition. The same is true of the emotional impulse of fear and its natural expression in bodily activity. On the other hand, my power of recognizing my assailant and of thinking of him in his absence implies the possession of a special cognitive disposition corresponding to that object. Further, the fact that, whereas I was formerly indifferent to this object, now I cannot think of him without anger or fear or a blending of the two emotions and attitudes, this fact, which we express by saying that I entertain a sentiment of hatred for him, implies that these two conative dispositions have become associatively linked with the cognitive disposition, and that these links have become permanent features of the structure of my mind.

„The effect of such linkage is not only that, whenever the object of the sentiment is forced upon my attention, my thinking of him is coloured or suffused with these emotions, but also that I am rendered peculiarly apt to think of him. If I pass by a crowd of which he is a member, my eye singles him out and watches him furtively; if we both have occasion to attend the same board-

meeting, I am acutely aware of him and of all he says and does, though I may avoid glancing at him; if I overhear his name mentioned by others in conversation, I am all agog to hear what is said. And this may continue in spite of my best efforts to cast out this demon of hatred and to resume my former attitude of indifference. Again, all my thinking of my adversary is biased by my attitude; whatever I hear to his discredit I accept and retain, and I attribute his actions to the meanest motives; until, by repetition of this process of selective thinking under the guidance of the specialized conative tendency, I come to think of him as a monster of iniquity.

„Let us consider the influence on the cognitive life of the growth of a sentiment, in the light of a more agreeable instance. Imagine a light-hearted girl whose life has been a perpetual round of pleasures and social ‚duties'. She marries and becomes a mother. The child upon her breast awakens in her the hitherto dormant maternal impulse, and all her delight is to watch and tend it, to describe its perfections and fondly to imagine its future in the brightest colours. Like the man harbouring the demon of hatred, she, too, seems possessed by a strong spirit; but, if she could, she would not cast it out; for it is the source of all her joy. Now, the maternal impulse with its accompanying tender emotion implies the existence of a corresponding conative disposition; and the formation of the sentiment for the child involves the linking of this with the cognitive disposition which is the condition of all her thinking of the child; and the new mode of life is the result of this linkage. Shortly after this change in her life she is left a widow; now her affections are wholly given to her child, her whole being is devoted to it, and she tends it with passionate solicitude. The desire to secure its welfare becomes her dominant motive, to which all her thought and all her doing is subordinated. Perhaps she takes up the study of hygiene, masters the elements of physiology and the principles of clothing, of feeding, and of training in bodily habits; if she is a very exceptional woman, she may even take up the study of psychology. All this intellectual activity and resultant expansion of her mental structure is prompted and sustained by the strong maternal umpulse concentrated upon its one object. All her new knowledge is built up around her child, which she studies as assiduously as she tends it; in virtue of its being the exclusive object of the strong sentiment of maternal

love, the child becomes the nucleus about which a whole system of new knowledge, new interests, and new habits, is built up [1]). The purposive energy which sustains and directs all these activities about the child and its welfare is that of the maternal impulse; and the constant direction of this energy towards this particular object is the result of the development of the mental structure which is the sentiment of love for the child. For, though mother-love may seem to spring up almost full-blown, it is in reality a growth, subject to favourable and retarding influences; a system of tendencies which strengthens with use, atrophies with disuse, and only gradually attains its full strength and perfection. We realize this more clearly if we reflect upon other instances of maternal love; how, in a mother of several children, it may be concentrated wholly on one of them; how in a childless woman the maternal impulse may be evoked by some other object, a dog, or cat, or bird, and, becoming habitually directed to that object, may generate a sentiment strangely like maternal love.

„Now, in order to bring home to our minds the full importance of such cognitive-conative linkage, let us carry the history of the devoted mother a step further. After some years of devotion, during which the sentiment has grown all-powerful and has a generated a great system of knowledge, habits, and interests, the mother loses her child. She is prostrated with sorrow, and, when the first paroxysm of grief is past, she remains inert; the mainspring of all her energy is stopped at its source; the will to live, which for years has poured itself freely through this one system, finds no adequate channel through which to animate her organism; and slowly she dies, her end probably hastened by the invasion of phthisis or of some other disease, which she no longer has the energy to resist. Or, if she continues to live, her best chance of restoration to a life of activity and health lies in the finding of some new object for her maternal impulse, to which the whole system of her master-sentiment may, with some readjustment, direct its activities, thus opening once more the choked channels by which alone the vital energy can adequately suffuse her whole being. She may turn to work on behalf of children in general, and find happiness in managing a children's hospital or in other good works; in which case the energy of the maternal

[1]) I would now add 'new tastes'. Cf. the concluding section of this survey.

impulse, being diverted or redirected, is said in technical language to be sublimated.

„In the foregoing paragraphs we have illustrated the nature and growth of the functional connexions between cognitive and conative dispositions, taking strong and complex sentiments as our instances. The structure of the normal adult mind comprises many such sentiments of all degrees of strength and complexity, from what is called a passing fancy or aversion to strong, enduring, and highly complex sentiments of love and hate. In the structural basis of a complex sentiment a number of conative dispositions may be comprised. But the linkage of a conative disposition with any one cognitive system does not preclude it from becoming linked with others; it may thus enter into the composition of sentiments for an indefinite number of diverse objects. Thus each principal conative disposition must be regarded as linked with a considerable number of cognitive systems, by each of which it may be brought into activity, and through each of which in turn it pours its conative energy, thus maintaining the activities of that cognitive system and promoting its further growth and differentiation.

„It must be pointed out in passing that not only persons and places and material things may become the objects of sentiments, but also highly abstract and general objects, such as moral qualities, power, wealth art. Of some men it is no more figure of speech to say that they love virtue or power or the Church, that they hate vice or dirt or disorder. In respect of their growth and constitution, such sentiments seem to be subject to essentially the same principles as those directed to more concrete objects. They constitute a most important part of the structure of the mind, since on them depends all that part of behaviour which we call moral conduct"[1]).

In the year 1910 Stout published the third edition of his *Manual of Psychology*. It contained an important feature, one lacking in the preceding editions; namely, a brief recognition of human instincts and of their fundamental role in human liffe. This addition seems to be made somewhat half-heartedly, almost under protest, in deference to McDougall's insistence. For Stout's

[1]) It is clear that McDougall's hormic psychology aims to carry through the program sketched by Nietzsche: „Man muss – – stets zurückschliessen von der Meinung *auf den Trieb* der sich darin äussert." Cf. p. 19 of this article.

wonderfully penetrating mind works most freely and effectively among abstractions and generalisations, rather than among concrete particularities. It would seem that, with the recognition of the several instinctive sources of conation, psychology becomes too concrete for the taste of Stout, who, after this last addition to his psychology, has (like so many other psychologists) taken refuge in philosophy, to the lasting loss of psychology. Yet, without descending to such concrete particulars, psychology can never perform its all-important function of providing a basis for the social sciences and for the practical arts of the management of men, notably psycho-therapy, mental hygiene, education. For in all these fields we need not only to understand the general principles of mental life, of conation and feeling and cognition, which Stout has expounded with incomparable mastery; but we are confronted with concrete instances of motivation, of conflict of particular tendencies, of needed adjustments, harmonization and integration; in all of which cases a knowledge of general principles alone is of little assistance, unless supplemented by insight into the various concrete factors at work in each particular instance, and most of all, the particular impulses at work sustaining the activities of each person.

SHAND'S FOUNDATIONS OF CHARACTER

In the spring of the year 1914 Shand published his *Foundations of Character*. To the preparation and writing of this work he had devoted many years. Its subtitle runs „Being a Study of the Tendencies of the Emotions and Sentiments"; throughout its topic is the organization of the affective life. We are told in the preface that the author has treated in detail only of the primary emotions and that he hopes „to publish before long another volume treating of the sentiments in the same detail". But the book does treat at some length of the sentiments and of character, as is sufficiently shown by the fact that one hundred and forty-four laws of character are tentatively formulated.

It is with diffidence that I attempt to indicate concisely what seem to me the main features of this large volume wholly devoted to the elucidation of the organization of our affective life. I will state first what seem to me its positive contributions of lasting value over and above Shand's fundamental achievement of

earlier date which we have already noticed, namely, the distinguishing of the sentiment as an enduring disposition from the emotion as a fleeting experience and activity; and will discuss, in a later section, certain respects in which it seems to propound untenable doctrines.

Shand distinguishes clearly between, on the one hand, the abstract qualities of conduct and of character and, on the other hand, the concrete tendencies or forces which operate within us. This is a great and original service that clears up (for those minds capable of being cleared) an age-long confusion, one which has pervaded and perverted all discussion of this field of problems from Aristotle onwards (and, it would seem, is destined to be perpetuated for a long period yet to come).

He adopts unreservedly the dispositional account of the mental structure, although, in this as in other matters, his language is not always consistent. He writes of organic laws of mind, distinguishing these laws from the mechanical laws of Association; and asserts that these organic laws are the laws of character and also „are in fact the laws of our instincts, emotions and sentiments". All these are dispositions or systems of dispositions the manifestations of which in our activities lead us to infer forces working towards goals. „These forces which are also systems, these systems which are forces, with their laws and subsidiary components, constitute our character. For with them and in them everything else that belongs to it [character] is organized: our thought and volitions, even the virtues and vices that distinguish us.... those of our ideas which are attended to, arrested, recalled, are largely under the control of these same forces or systems of our character, whose organic laws organize and direct them".

We note that here Shand maintains his refusal to distinguish between intellect and character; nevertheless, and in spite of that kind of traditional laxity of speech and thought which describes laws as active agents, and refuses to distinguish between a force and the system from which it springs, all this is sound and important truth.

Shand distinguishes some eight primary emotions and classes with them, as of essentially similar nature and status, what he calls the appetites and primary impulses. And all these he regards as innately given systems or native dispositions from which spring what he calls ‚the primary forces', all of which are conative

impulses, tendencies „to pursue certain ends" [1]). These primary natively-given systems are, then, the raw materials of character. „We have to trace the laws of the action and interaction of these primary systems in the pursuit of their pre-determined ends". (p. 34). The sentiments are larger systems within which the various primary dispositions are organized. The problem of the organization of the sentiments into one all-comprehensive system is left for the volume that was never written.

Another important and original contribution of this volume was the definition of a class of emotions of peculiar status, hitherto confounded with the primary emotions, under the heading „the prospective emotions of desire". The principal members of this class distinguished by Shand are confidence, hope, anxiety, despondency and despair. They differ from the primary emotions in that, while the latter spring each from into own native disposition, the former are well-recognized qualities of feeling which colour or pervade, or give their peculiar tones to, consciousness whenever any strong conation or desire of whatever origin is working towards its goal; the particular quality prevailing at any moment (such as hope, anxiety or despondency) being determined by the prospect or foresight of success or failure at that moment. So long as this distinction, the distinction between the primary emotions and the ‚emotions' or complex feelings of desire, is not observed, the psychology of the emotions and of the affective life in general must remain chaotic and confused.

Yet another distinction, one of less importance than the last mentioned but yet of great value for the clarification of the whole affective field, was made by Shand in separating temper from temperament.

McDougall had believed that in his account of the sentiments, of their origin and their systematic conjunction to form character, he was but developing the conceptions of Stout and Shand. He was therefore discouraged to find, on the publication of Shand's book, that Shand's conceptions of instincts, of the emotions and of the sentiments were in important respects very different from his own.

He sought an early opportunity to discuse and, if possible, remove these differences. A symposium was arranged by the

[1]) Instincts are regarded as minor dispositions (which determine highly specialized forms of bodily movement) organized within the various primary systems.

Aristotelian Society and was held in October 1914, the participants being McDougall, Shand, and Stout, in that order. No approach to agreement was made. The war had begun. Contact between Shand and McDougall was lost and was never renewed. In his second edition Shand showed strong resentment against McDougall's differences of view. McDougall felt that any further attempt to discuss these differences would inevitably embitter Shand's reaction. Hence, up to the present day these differences have remained, undiscussed and unmitigated, disastrously obstructing progress in this department of psychology.

At first, rapid progress seemed assured. McDougall's book was widely used in English and American colleges; Morton Prince the leader of American psycho-pathology, had accepted it with enthusiasm by 1913, and later made its teaching the basis of a new dynamic interpretation of his many interesting cases of functional disorder.

After the war a symposium arranged by the British Psychological Society revealed a wide-spread acceptance of the theory of the sentiments [1]). A number of British authors have adopted the theory explicitly; and not a few have expounded it or made use of it in the interpretation of social phenomena. But none have seemed to notice the great differences between the theories of Shand and of McDougall respectively. While outside Britain there would seem to be but very few persons who in any degree understand or appreciate the theory; as indicated in the foregoing review of German, French and American contributions to our topic. It seems worth while therefore, now that Shand's feelings can no longer be hurt by frank discussion [2]), to examine these differences and, if possible, remove this bar to progress; or, at least, a bar to the understanding of a theory which has *prima facie* a good claim to resolve many problems of the affective life which have long been at a standstill.

Concluding Section

In this section I propose to abandon the historical form and to

[1]) British Journ. of Psychology, vol. 13. 1922. The participants were Drs. W. H. R. Rivers, A. G. Tonsley, A. F. Shand, C. S. Myers, Bernard Hart, T. H. Pear. Hart who, in his well-known little book, *The Psychology of Insanity*, had used the word ‚complex' to denote both the morbid complexes of the normal sentiments, agreed to the differentiation of the two words 'complex' and 'sentiment' to denote the morbid and the normal formations, respectively, as advantageous.

[2]) Obiit 1935. Requiescat in pace.

discuss in the first person the differences between Shand's theory of the sentiments and the theory very briefly sketched by Stout and developed by myself.

The differences at issue involve a group of closely allied questions which are very deep-going. I have partially dealt with some of them in my later books, but take this opportunity to defend concisely my own view, after the most anxious and hospitable examination of Shand's proposed alternatives, a process prolonged throughout some twenty-two years [1]).

(1) In regard to the instincts Shand accepted the naturalist's view, by which, as we have seen, James was too much influenced, that view which regards each instinct as capable of producing one rigidly prescribed train of movement only. It is true that Shand did not regard these movements as mechanical reflexes; but rather as truly impulsive or conative. Yet it is only in the variations of movements, adapting them to special circumstances in such ways as make for the attainment of a goal, that their conative nature is objectively revealed. If once this adaptability of instinctive action is admitted, Shand's chief ground for separating the dispositions of the primary emotions from the instincts falls away. For it was this view of instinct that led Shand to reject my identification of the dispositions of the primary emotions with the instincts. If mere movements of walking, running, and grasping, etc. are properly regarded as expressions each of a special instinct (as they are by Shand) then, of course, we can find no trace of emotion corresponding to each of such modes of movement. For Shand the primary emotion had its own natural

[1]) I will venture to make a remark that has implications of some importance for psychology in general. My *Social Psychology* was published some six years before Shand's book and made full and, indeed, as it proved, excessive acknowledgements of Shand's priority in formulating the theory of the sentiments as the solution of many of the long outstanding and much discussed problems of affective organization. When, then, Shand found that the theory of the sentiments developed by me, in pursuance of the clues furnished by Stout and himself, differed in very important respects from the theory which he developed in his book, it was an elementary obligation upon him to examine my theory, or, at least, to state however briefly why he could not accept it: especially in view of the fact that my book had already been very widely read and widely used as an aid to teaching, and indeed acclaimed as an important contribution by not a few authors of acknowledged standing. His index contains eight references to my book; and seven of these are concerned to refute or modefy some minor points in which the views expressed in my book differed from his. But of the principal and deep-going difference, namely that concerning the nature and the formation of the sentiments Shand makes no mention. I cannot see how psychological theory (which in these days lags so far behind the piling up of masses of facts observed) can progress, if authors neglect to examine or to criticize the theories which they propose to discard and to replace by theories of their own devising.

goal distinct from that of the several instincts which might be organized within its own complex disposition.

(2) Shand, thus rejecting on altogether insufficient grounds what had seemed to me a most useful guide to the recognition of the true primary emotions, arrived at a rather different list of primary emotions; and, following a view first laid down by Descartes and traditionally accepted by many authors, he included joy and sorrow among the primary emotions. On the other hand he refused to recognise as primary the tender emotion which I had identified with the morking of the maternal instinct and to which I had attributed a role of the first importance both for psychology and for ethics. And Shand sought to show (as he had done in his chapter in Stout's *Groundwork*) that tender emotion is always a blending of joy and sorrow in various proportions.

Instead of recognizing in woman (and in every mammalian mother) one powerful maternal instinct capable of prompting a variety of actions in response to the varying situations of the child, Shand, in accordance with his general view of the rigidly prescribed character of each kind of instinctive action, asserted a whole bundle of maternal instincts corresponding to all the various modes in which a mother naturally cherishes her child.

Now there are, it seems to me, many good reasons for refusing to regard joy and sorrow as primary emotions; and Shand himself has, I maintain, indicated (without following it) the true way of regarding and classifying joy and sorrow, in his very important and original doctrine of the derived emotions of desire.

Shand makes plausible the view that joy and sorrow are primary emotions only by extending the name ‚joy' to every instance of enjoyment or pleasurable activity, however trivial; and by extending the name ‚sorrow' to every form of displeasure or suffering, to every painful, disagreable or distressing experience however trivial. If a child enjoys its food, he claims that as joy. If a child weeps because denied the satisfaction of any trivial desire, or because he falls and hurts himself, he calls that ‚sorrow'. And since, as Shand himself, as well as Stout and many other authors recognize, pleasure tends to sustain and prolong any activity whose success brings pleasure, Shand asserts that joy, as a primary emotion, has the tendency to preserve its object.

Similarly, while admitting that the pain or unpleasure or dissatisfaction, which arise from all failure of impulse to attain

its goal, weakens the impulse, Shand asserts that all thwarting of impulse occasions sorrow, and that sorrow as a primary emotion has, as its natural tendency, the impulse to cry for help. Now, that we have an instinctive impulse to cry for help, when our own efforts toward any strongly desired goal prove completely unavailing, is, I think, undeniable [1]). But to extend the name ‚sorrow' to the simple emotional excitement that accompanies this simple instinctive impulse is, I suggest, an abuse of language, parallel to the abuse which extends the name ‚joy' to every pleasant experience. The word ‚sorrow', in any strict sense conformable to established usage, is applicable only to the emotion which is evoked when some strong sentiment of love or devotion is thwarted, as by the destruction of its object; as, most notably, by the death of a much loved person. Sorrow, in short, in any proper sense of the word, presupposes a sentiment of love; and can only arise when such a sentiment has been acquired for some object. It therefore cannot be a primary emotion, but falls into the class of the emotions of desire which Shand himself was the first to distinguish and define [2]). Shand recognized only the prospective emotions of desire. But, as I have argued in my *Outline*, the desires of our sentiments, especially those of the sentiment of love, do not cease to work in us when the object is destroyed, or put beyond our reach; rather our desires then persist and recur and become retrospective. Regret is the most general of the emotions deriving from retrospective desire; and sorrow is the tender regret of the baulked desires of the sentiment of love in all its forms.

Joy, on the other hand, in any accurate sense of the word, is also a derived emotion of desire, deriving most commonly from the desires of some strong sentiment (most typically from the desires of love) when these are gratified either actually or in anticipation. Joy, however, unlike sorrow in this respect, may derive not only from the desires of love, but also from the desires of sentiments of other types, notably from those of hatred and from those of the sentiment of self-regard, especially when that sentiment takes the form of ambition.

---

[1]) I had failed to recognize this instinctive tendency so clearly manifested by all infants and young children and by many young animals; but have made good the omission in my *Outline of Psychology* proposing the name 'instinct of appeal' for this simple primary impulse or *Trieb*.

[2]) See preceding footnote.

Shand's denial that tender emotion is the natural accompaniment of the parental impulse may find some support in the fact that Professor Freud and the psycho-analysts in general have never recognized tender emotion as a mode of experience independent of the sex instinct. But they have also been so blind as to ignore entirely the maternal instinct and impulse, or to confuse it with the sex-impulse. In recognizing the independence of the maternal impulse and its tender emotion I, on the other hand, can invoke the high authority of Ribot. And I may also point to a recent work of a revolting disciple of Freud, the late Dr. Jan Suttie, who, in his book *The Origins of Love and Hate*, while ignoring completely the theory and the facts of sentiment formation, finds himself driven to recognize the parental impulse as an original constituent of human nature [1]). This is one of those questions on which the comparative method, the comparison of men with their nearest animal relatives, throws a decisive light. No one who has watched a chimpanzee mother tenderly guarding and aiding her little one can be in doubt about the fact of the maternal instinct in the great apes, and one might have thought that the observation of the female dog with her puppies would suffice. But Shand, like Freud and the psycho-analysts, made little or no use of the indispensable aid to be found in such comparative studies.

Shand's view that tender emotion (which, unlike the psycho-analysts, he fully recognizes) is always a blending of joy and sorrow involves, as a corrollary, the proposition that the emotion of a mother delighting in her thriving and beautiful child is not at all tender so long as it is purely joyful; and becomes tender only when sorrow mingles with the joy. Surely, a proposition that flies in the face of common experience and observation!

I conclude this criticism of Shand's treatment of joy and sorrow by pointing out that he himself in one section, in complete inconsistency with his contention that they are primary emotions, adopts, at least for sorrow, the view I have later taken, namely, that they belong to the class of derived emotions of desire.

(3) These foregoing and other differences in respect of instincts and emotions, necessarily imply differences of view in respect of

---

[1]) Sutie's complete ignoring in this book of all that has been written on the sentiments by Stout, Shand, myself, and many other British authors is a flagrant instance of the all-too common kind deprecated in my footnote on p. 88.

the sentiments. But Shand's theory of the nature of the sentiment differs still more widely from that propounded by Stout and developed by myself. For Shand, the principal sentiments are *innately* organized systems undergoing spontaneous maturation and ready, like the dispositions of the primary emotions, to be brought into play on the appearance of the appropriate objects. Shand discusses at some length the sentiment of maternal love, and it may serve to illustrate the peculiarities of his form of the theory. The primary emotions chiefly manifested in the course of the working of the maternal sentiment are, Shand says, joy, sorrow, fear and anger [1]). He argues that, since each of these four emotions seems to be manifested by the mother toward her child on the first appropriate occasion that demands it, the sentiment must consist of the dispositions of these four primary emotions linked *innately and directly with one another*, together with the many instincts that (according to his assumption) are innately organized within each of these four emotional dispositions.

It cannot be said that, for Shand, the instincts are to the emotions as the emotions are to the sentiments. For, although the disposition of each primary emotion has various instincts innately organized within it, it has (in his view) its own natural tendency distinct from theirs; the emotional disposition is something over and above the various instincts which it comprizes. Whereas, in his view the sentiment has no tendency and no end of its own distinct from that of its component emotions; the sentiment does not merely contain within its larger system the dispositions of joy, sorrow, anger and fear; rather it consists of, or is constituted by, these four dispositions innately and directly linked with one another. This, at least, seemt to be the only possible meaning of such passages as those in the footnote [2]). Yet there is one passage (p. 43) which seems to imply that, just as the disposition of any primary emotion is (in Shand's view) more than the system of

---

[1]) As we have seen he denies that tender emotion is primary and in that sense simple.

[2]) „In treating of love in its simplest and basic states, as *constituted* of the dispositions of joy, sorrow, fear, and anger, with their connected instincts...." (p. 45). And it is said that in the sentiment the primary emotions are innately organized to promote a common end. „Each has its proper place and function in the animal economy [and in the sentiment]. They may therefore be regarded as constituting a system: a system which is innate, — inherited not acquired, — in respect of (1) its adaptation to the stimuli which arouse it; (2) the bond connecting its principal emotions; (3) the common end which these are destined to secure". (p. 46.).

instinctive dispositions organized within it; so also, the sentiment is more than the system of emotional dispositions organized within it: „We inherit an innate disposition not only to feel fear, anger, curiosity, joy, and sorrow, as isolated emotions in relation to certain objects which are innately connected with their excitement, but also an innate disposition to Love which organizes all of them. *But there is no maternal love in the animal mind until there is offspring to love.* There is only the innate capacity to feel love, and to behave in any one of the complex and instinctive ways characteristic of love, when the appropriate stimulus is applied. As soon as offspring are perceived, this system tends to become active in response to it, and to manifest just that instinctive behaviour and that particular emotion which in the given situation is appropriate" [1]).

I submit that this view of the constitution of the sentiment inevitably involved Shand in difficulties from which he could not extricate himself without radically altering his view. I will go so far as to suggest that these difficulties were chiefly responsible for the fact that, in the twenty-one years that remained to him, during which he did not lose his interest in psychology, Shand failed to produce his promised second volume, designed as the crown and completion of his life's work.

I shall try to show very concisely that the theory of the sentiments, in the form propounded in Shand's book, is unworkable and untenable; and then go on to show equally briefly that the theory, in the form proposed by Stout and developed by myself, avoids these major difficulties and finds support in a multitude of facts which were ignored by Shand.

In this alternative view, the dispositions of the primary emotions are not *innately* linked together in systems; and, in the course of the formation of a sentiment, they do not become

[1]) In passing I merely call attention to the baffling ambiguity of this passage, especially of the sentence underlined. Does Shand mean that „the innate disposition to love" is something over and above and distinct from the linked dispositions of joy, sorrow, fear and anger? If so, then the capacity to feel love is presumably distinct from the capacities to experience these four emotions. But Shand has explicitly and at length identified tender emotion or feeling with a blend of joy and sorrow. What then is the quality of the feeling of love as distinct from this blend? Or does he mean that the system of love consists of these four primary dispositions so interconnected or organized as to form a system that, in virtue of this arrangement, the system produces any one of these four emotions appropriately according to the nature of each particular occasion? It is impossible to say; for Shand had never clearly defined this question in his own mind.

directly linked together; rather they become only indirectly connected with one another when two or more of them become directly linked with the cognitive system corresponding to the object of sentiment. Consider the clearest and most easily comprehensible of all complex sentiments, that of hatred. Let us note first Shand's account of the sentiment of hatred. He finds that, in relation to the hated object, one experiences joy, sorrow, fear and anger, according to the varying situations of the object. Therefore, he argues, the sentiment of hatred must comprize the dispositions of these four primary emotions directly and innately linked with one another [1]). Thus Shand's reasoning leads him to the strange conclusion that, in their essential composition, i.e. in respect of the primary emotions of their systems, there is no difference between love and hate. The two systems are alike in respect of the emotions and instincts organized within them: „Thus hate is indeed, like love, a sentiment (and not a solitary emotion) which includes at least the four primary systems of fear, anger, joy and sorrow, — though connected with different causes and ends, — as well as many other emotions which are in general the opposites of what love would feel in the same situations". In this and in other passages, Shand insists, rightly enough, that the loved and the hated object excite opposite, or at least very different, emotions when encountered in similar situations — especially in respect of joy and sorrow. Now this account leaves us asking a number of questions which Shand never deals with, never even raises, and which seem to me utterly insoluble in terms consistent with his view of the structure of the sentiments of love and hatred.

Let us first make it quite clear that, for Shand, all loves, all sentiments which merit that title, are of similar (though not necessarily identical) composition. „There is an innate system at the base of all varieties of love, so that we may even speak of the disposition of love as being as much inherited as the disposition (sic) to the primary emotions". We are told that this is true of self-love, parental love, sex-love, love of country, (and by implication every other kind of so-called love — love of gambling, etc. etc.). „We can only indicate the presence of the same four fundamental emotions as in all varieties of love". (0p. 57).

[1]) „The same four emotional dispositions of fear, anger, joy and sorrow which are essential to the system of love are present also in the system of hate". (p. 59).

Here are some of the insoluble questions raised by this view, questions which Shand passes by, without notice, or with only the most perfunctory attempt to find answers.

(1) How do the innately preformed systems of love and of hate find their appropriate objects? Why in the main do we love those that do good to us, and hate those that despitefully use us?

(2) Having found their objects and thus become fully formed sentiments; why do the two systems, that of love and that of hate, react in very different (as Shand insists, opposite) fashions to their objects? If both sentiments consist essentially of joy, sorrow, fear and anger; why do we rejoice at the prosperity of the loved object and at the downfall of the hated one? It seems absurd to raise the question, because the answer seems implicit in the very nature of love and hate. Yet Shand's account of the two sentiments forces the question upon us and leaves us without an answer. Shand observes, briefly enough, that „hatred is a system that.... works for the destruction of the hated thing"; while love tends to conserve and restore its object; „has as its end the well-being and preservation of the beloved". But, if the two sentiments are composed of the same four primary emotions, why this vast difference of their tendencies?

In some passages he seems obscurely aware of these and allied difficulties, — as when he writes that love and hate „are connected with different causes and ends". But, though he asserts again and again in various passages the very obvious differences between love and hate, he throws no ray of light upon the questions here raised [1]).

It is true that he writes: „the peculiar tendencies of each emotion can be adapted to the end of the sentiment which organizes them", and in other similar passages speaks of the ends of the two sentiments as different and opposite. But again we ask — Why, if they comprize the same emotions and tendencies, are their ends of opposite nature?

The sad truth is that Shand has put forward, for the explanation of love and hate and of their opposite or very different tendencies, a theory which does not explain. And he makes it

---

[1]) E. g. Repeatedly he tells us that in hate the emotions directly evoked by its object are in general antipathetic, while those directly evoked by the loved object are sympathetic. But again, while admitting the fact, we are left asking — Why, in terms of Shand's theory, should it be so?

seem (to himself and to uncritical readers) to explain, only by personifying love and hate. Love is an angel within the breast which directs the emotions of joy, sorrow, fear and anger upon the loved objects in one way; and hate is a monster which directs the same four emotions upon its objects in the opposite way; and each of these personified agents, love and hate, acts in this way because it is in its nature so to do. In short, Shand's first and last word is that it is the nature of love to love, and of hatred to hate. But this is not explanation. It is not psychology. It is mere mythology. It is merely long-winded and round-about description of the facts of love and hate, without the faintest explanatory power. It is restating the facts in many different ways, without in any sense explaining or illuminating them.

This seems harsh criticism; and that is why I have withheld it for twenty-two years. But the interests of science must come before personal considerations. That Shand does find his pseudo-explanation in such personification of the sentiments of love and hate as I here brutally assert, cannot be denied. Thus: „When, however, we find the sympathetic and tender emotions, so frequent in love, generally absent from self-love, and replaced in hate by hard and antipathetic emotions, we can see that these great sentiments, ***working to their appointed ends***, [italic's mine] will assimilate or exclude any given emotion according as it can or cannot be utilised by them. This we shall assume to be a fundamental law of the organization of all sentiments". (p. 61).

And this is the fifth of Shand's round gross of laws of character: „Every sentiment tends to include in its system all those emotions that are of service to its ends, and to exclude all those which are useless or antagonistic"; (p. 62). Clearly it is here implied that each sentiment is an intelligent being, having its own fixed nature over and above that of the emotions and instincts said to be organized within it (a nature which, in the case of the sentiment of love, is benevolent and, in the case of the sentiment of hate, is malevolent) a being which intelligently and purposively selects from the array of emotions at its disposal (because organized in its system is the same array in the cases of both love and hate) those concordant with its nature and purposes and directs them upon its object in such manner as to favour and preserve the object of love and to destroy the object of hate.

Shand even inserts a paragraph justifying this personification

of the sentiments. Possibly personification may be a defensible method for certain purposes; but to use it is to give up the attempt to explain how the higher more complex functions are evolved from simpler or elementary functions, i.e. to give up the attempt at genetic explanation, which is what Shand sets out to give us.

Further, if, as Shand asserts, the dispositions of joy, sorrow, fear and anger, were intimately linked with one another, we should find that any object which evokes one of these four emotions would evoke also the other three; and the commonest of all emotional qualities in human experience should be a blend of these four primary qualities. And, on the other hand, no one of these four should ever be experienced purely and simply as such. The mere fact that we do experience each of these four qualities separately ,and are familiar with the quality of each', is sufficient ro rule out Shand's account; and the fact that we do not commonly recognize by any name a blend of these four qualities is also highly significant. A blending of the emotions of anger and fear is familiar to us, and would commonly be called an emotion or feeling of hate; and Shand himself asserts that a blending of joy and sorrow is the tender emotion; hence it would follow from Shand's account that a tender hate should be the commonest of all emotional experiences. But is such a quality ever experienced? Has it ever been described? Shand himself does not claim it as a reality.

Note also a difficulty of a third type. Love is of many varieties; that is to say, we use the word ,love' as the class name for many different sentiments, for sentiments which are different and distinct not only in respect of their objects, but also for sentiments which are very different in respect of their composition and modes of operation. To mention only one instance — sexual love comprizes the disposition of the sex-instinct; yet, according to Shand, it also comprizes the dispositions of joy, sorrow, fear and anger. How then does the innate system of love, in becoming sex-love, incorporate this additional disposition?

And how, under Shand's scheme, account for those cases of sexual passion which are purely lustful and not at all tender; the cases which seem to consist in simple fixation of the sex-impulse upon one exclusive object? In such cases, anger may be easily aroused by frustation, but no tenderness, and no sorrow.

And closely allied with the last difficulty is that offered by the very simple sentiments such as are acquired by the higher animals and by young children. When a dog (or a child) is repeatedly struck or otherwise frightened by a certain man, he quickly acquires a standing fear of that man. Such a standing fear has all the essentials of a sentiment, but a sentiment of extreme simplicity, comprizing a single emotional disposition.

Two minor criticisms of Shand's treatment may be added. Shand wrote in a very questionable manner of his emotional systems as being partly in the mind and partly in the body: „Every system of the mind is incomplete, and has part of its system in the body; and every system of the body, which is not merely reflex, is also incomplete, and has part of its system in the mind" (p. 27). Again: „We have distinguished three parts in the system of an emotion: (1) that part which is in consciousness and is alone the felt emotion; (2) that part which is organized in the body; (3) that part which is present in our behaviour and accessible to external observation". (p. 185). That such language implies confusion and accentuates it needs no demonstration.

More serious is the fact that Shand treated of the prospective emotions of desire as though these, like the primary emotions, were rooted each in its own specific native disposition and were each an independent source of conative impulse. This feature of his doctrine seems to be quite untenable. For it involves an endless regress. It would imply that all desire springs from a complex desire system within which are organized the dispositions of all the prospective emotions of desire. And, since each of the latter is represented by Shand as capable of generating its own desire, each must again contain, within its system, dispositions to all the prospective emotions. This feature was criticized by me in the symposium mentioned above; and, as Shand on that occasion seemed to repudiate this implication, he may be held to have revoked this part of the exposition in his book. The point therefore need not be further dwelt upon; but it has its bearing on the question of the status of joy and sorrow.

The alternative form of the theory of the sentiments, differs from Shand's in two principal respects: First, it postulates no innate organization of the sentiment, but assumes rather that all sentiments are formed through individual experience. Secondly, it does not assume that, in the formation of any sentiment, the

emotional dispositions become linked directly with one another; rather it infers that each affective disposition becomes linked directly with the cognitive disposition which corresponds to the object of the sentiment and is active in all thinking of it [1]).

We see this most clearly in the case of a simple sentiment of acquired fear for a particular object. The history of this topic is full of debate as to whether such fears are innate or acquired. The truth seems clearly to be that in one sense they are innate, namely, in the sense that the disposition of fear is innate; while is another sense they are (in most cases at least) acquired, namely, in the sense that the enduring connexion between the affective disposition and the cognitive disposition is acquired. It is this acquired connexion which is the essence of the sentiment; and the formation of such connexion is the essential process in the formation of a sentiment. The newly formed sentiment is not wholly new; it is a complex structure formed by the uniting of two (or more) dispositions to form one system [2]). And the connexion is one conditioning a two-way influence; excitement of the cognitive disposition spreads to the affective: and conversely the thinking of the object excites the fear; and the fear fixes attention upon the object and keeps it present to consciousness. The simple system (a rudimentary sentiment), thus formed, may then grow in complexity in two ways: first, the cognitive disposition tends to grow in complexity on every occasion of its activity. Secondly, the system may increase in affective complexity through incorporating an additional affective disposition; a process which may be repeated, until several affective dispositions are all directly linked with the one cognitive disposition;

[1]) The theory does not insist that no sentiments are innate. It may be that some are innate; but that would involve the not impossible assumption that the cognitive dispositions involved are also innate. Already in 1913 I pointed to this possibility as one of the urgent and very difficult problems confronting us. The essence of the theory is the second feature, the direct linkage of cognitive with affective dispositions. As Stout puts is: „An object which has been connected with agreeable or disagreeable activities, which has given rise to manifold emotions, which has been the source of various satisfactions or dissatisfactions, becomes valued or the opposite in and for itself. It becomes liked or disliked, loved or hated, for its own sake". And again: the relation of a sentiment „to emotions, conations, pleasures, and pain, as actually felt, is twofold. On the one hand *it develops out of them*. It is through the varied forms of agreeable interest felt by me from time to time when I have social intercourse with a man that I begin to entertain a sentiment of friendship toward him. On the other hand sentiments, when *they have come into being*, are themselves independent sources of manifold feeling-attitudes and conations". (Italics mine).

[2]) Any innate system involving a cognitive disposition linked with one or more affective dispositions would properly be classed as an instinct.

i.e. all their tendencies have become 'fixated' on the one object.

The indispensable postulate of the theory in either form is the existence and distinctness of cognitive and affective dispositions. Shand, after making this well-founded postulate, throws away its advantages, by his assumption that the principal affective dispositions are all innately connected together in one system. By this unwarranted assumption he deprives his scheme of the pliability, which is the great virtue of the alternative form of the theory. Under this second form each affective disposition that (by becoming linked with a cognitive disposition) becomes a part of the structure of one sentiment, remains free to enter into similar enduring connexions with other cognitive dispositions, and thus to become a member of an unlimited number of sentiments for as many distinct objects. Thus, there is no limit to the number of distinct objects that one may learn to fear, i.e., for which one may acquire a more or less enduring sentiment of simple fear; and each of these sentiments functions in *relative* independence of the others [1]). And some of these may remain simple (in the sense of containing only the one affective disposition) while others may undergo further complication through incorporation of other dispositions. For example, a child, in learning to fear three men, A, B and C, acquires three simple sentiments of fear, α, β, γ, for these three objects. On further acquaintance with, or experience of, the three men, he may continue simply to fear A. But B's treatment of him may repeatedly provoke angry resentment as well as fear. The sentiment β thus becomes a system comprizing the disposition of anger as well as that of fear; and each encounter with B will then evoke both fear and anger, the one or other affect predominating according to the situation of the moment. This sentiment β would then properly be called one of hatred for B. The third man C, while remaining an object of fear, might, by reason of great skill of some kind, evoke repeatedly the child's curiosity or wonder (suppose C to be a wonderfully skilful horseman, say a cowboy);

[1]) I say 'relative independence', because it is notorious that fear excited through one object frequently leads us to think of other feared objects; the fear disposition having been excited through any sensory channel, its continuing excitement predisposes us to think of other feared objects; which seems to imply that the excitement may spread from the affective disposition to the cognitive, though less readily than in the opposite direction. In my *Abnormal Psychology* I have pointed to grounds for believing that neurologically the connexion between the cognitive and the affective disposition is a double path, a cortical-thalamic and a thalamo-cortical.

and perhaps at the same time, or on other occasions, C's display of strength and courage and resource evokes in the child the affective tendency to look up humbly towards this hero. The sentiment γ thus incorporates, in addition to its original fear disposition, those of two other affects, namely, curiosity and self-abasement; and ,now may properly be called 'a sentiment of awe'. Suppose now this awe-inspiring figure C begins to condescend to his small worshipper, or rescues him in some desperate difficulty, or takes him out hunting or ranching, and thus, though remaining a stern awe-inspiring figure, evokes again and again the child's gratitude. The sentiment γ of the child for C thus becomes still more complex; it becomes real worship of his hero; for the sentiment, having incorporated the disposition of the tender impulse, may now properly be called 'reverence'.

This may seem a complicated story; but it is the sort of thing that is constantly happening in real life; and if psychology is to make any progress in enabling us to understand and influence individuals, it cannot remain forever content to say merely that the child shows fear, hate, awe, or reverence for this or that person. And the theory of the sentiments is the only way to understanding of such every-day facts.

The theory of the sentiments in the second form can and does recognize, and (its postulates, the affective dispositions, being granted) does account for, an immense variety of sentiments, simple and complex, combining the affective dispositions in many different groupings; and accounts also for the great variety and complexity of the emotional experiences which are apt to be evoked by the objects of our sentiments; sentiments not only of love and hate, but of respect and fear and admiration and awe and gratitude and disgust and horror; and also those most complex but somewhat unusual enduring attitudes which seem to combine love and hate for one person, sentiments which may be described in the language of psychoanalysis, as ambivalent.

How then does the second form of the theory account for the alleged facts which Shand regarded as fundamental for his theory and which led him to assert that joy, sorrow, fear and anger are the essential constituents both of love and of hate? For there is a certain plausibility about this allegation. Take the simplest kind of sentiment of attraction to another person; that of simple lustful desire directed, concentrated or ,fixated' on a member of

the other sex. Such a case, if the impulse and the fixation be very strong, is a typical passion, and is commonly called, with doubtful propriety, a form of love. The thwarting of the desire of such a sentiment is notoriously apt to provoke anger. But this is in conformity with the perfectly general law of anger; namely that it is apt to be evoked by the thwarting of any strong impulse or conation [1]); it, therefore, does not mean that the anger-disposition has been incorporated in the sentiment; although, if repeated thwarting comes from the object, it is likely to become incorporated, thus rendering the sentiment an ambivalent one. Again, every success of the impulse brings satisfaction, which Shand calls ‚joy'; and every disappointment of it brings dissatisfaction ‚which Shand calls ‚sorrow'. And when Shand asserts that fear also is always potentially present in a sentiment of love, he is, I suggest, repeating a common confusion between fear and the derived emotion which is properly called ‚anxiety'. The prospect of the loss or destruction of the desired object causes, not fear, but rather anxiety [2]).

The facts which Shand invokes to prove that the sentiment of hatred is composed of the same four dispositions are even more readily explained without that assumption. The essential affective components of hatred would seem to be the dispositions of fear and anger; and success of the tendencies of these two components brings satisfaction; while failure of their strivings brings dissatisfaction; effects which Shand's loose usage of terms allows him to call ‚joy' and ‚sorrow', respectively.

I do, then, most emphatically deny that the facts point to Shand's amazing assertion of identity of composition of the sentiments of love and hatred; also I deny that the dispositions of fear and anger are components of love, and that joy and sorrow

---

[1]) We do not understand why this is so; but biologically its advantage is obvious; for anger is the great reenforcer, as fear is the great inhibitor, of other impulses. And neurologically we may validly conceive that the anger-disposition occupies the position of a general recipient of energy overflowing from all other affective dispositions when their more ready outlets are obstructed.

[2]) Shand himself remarks: „anxiety closely resembles fear. It is usual with the poets to call this emotion of desire 'fear'." I do not deny that sometimes, when a loved person is in danger, one experiences fear; that is true also of unloved persons. If one sees a stranger stumbling on the edge of a precipice one may feel fear through sympathetic imagination; and the dangerous situation of a loved person is the more likely to provoke this reaction because our sentiment fixes our attention on him and the danger which threatens. For myself merely to picture a yawning chasm suffices.

are primary emotions or spring from innate dispositions specific to themselves.

I submit, then, that, although some difficulties and uncertainties remain in the account of the organization of our affective life, the most indisputable facts, namely, the formation of relatively simple sentiments of love and hate, respect, admiration, fear etc., are, in principle, adequately interpreted and made intelligible by the theory of the sentiments in the form proposed by Stout; while Shand's form of the theory involves him in insuperable difficulties, and is largely determined by the false assumption that joy and sorrow are primary emotions, having like fear and anger and the rest, their own specific dispositions and conative tendencies.

The theory of the sentiments (in the form of it due to Stout) has found strong support in two directions of research which have been largely developed since the date of its formulation.

First, the work of Pavlov and his disciples on the so-called ‚conditioned reflexes' has been in reality the experimental study of the process of linking affective dispositions with simple cognitive dispositions, or, in other words, the formation of very simple sentiments. Much of the work has made use of the salivary secretion of the dog as an indicator of the process of linking the food-seeking instinct, appetite or propensity, with simple perceptual dispositions. The assumption implied by the term ‚contidioned reflex', namely, that the reflex secretion of saliva is alone involved in such acquired reactions, is a most unfortunate error. More careful and unbiassed observation [1]) shows clearly that the dog's reaction, under the stardard conditions of the ‚conditioned reflex' experiment, is not a mere secretion of saliva, buth rather a total reaction of the whole organism of the kind which implies the coming into play of the innate propensity to seek and to seize food when hungry. The dog does not merely secrete saliva; rather his attention is drawn to and fixed upon the food or upon the signals which precede its appearance; he cocks his ears and fixes his eyes expectantly and strives toward the food; and, if his movements are not confined (as in the usual form of the experiment) he runs toward the place at which he has learnt to expect the food, using whatever movements may be necessary to circumvent or overcome obstacles.

[1]) Such as that conducted of recent years in my laboratory by Dr. K. E. Zener.

‚Conditioned reflex' experiments in which the fear-reaction (in men or animals) is evoked in place of the food-seeking reaction make it still more obvious that this interpretation of the facts is correct.

The second line of research is the study of morbid emotional reactions, those especially which are classed as the phobias, and also the simple perversions of the sex-impulse, such as the various fetihisms). As is now well-known, the phobia, or morbid fear of some kind of object, is often formed through a single fear-evoking experience; just as a lasting normal fear (or simple sentiment of fear) for some object (place, person, animal, thing, or event, such as ligntning) may be acquired through a single vivid experience. The difference in such cases between the simple sentiment and the morbid complex or phobia is merely that, in the latter type of case, the terrifying event occurs under conditions which lead to *repression* or dissociation of the complex. Now the theory of repression and of dissociation remains in many respects problematical. But that there is formed a new system by a process similar to that called by Pavlov ‚conditioning' is reasonably clear; it implies just such linkage of cognitive with affective dispositions as the theory of the sentiments infers. The facts of this order have been discussed at some length and interpreted in terms of the theory of the sentiments in my *Outline of Abnormal Psychology* (1927).

In another way also the study of the neurotic disorders confirms the theory of the sentiments; for, as Morton Prince showed, when disintegration of personality occurs in the hysteric subject, the planes of cleavage coincide with the boundaries between great systems organized about strong sentiments that in certain respects are antagonistic to one another, because their tendencies conflict, because they work towards very different and incompatible goals. And the art of treatment consists largely in bringing clearly to the patient's consciousness such incompatibilities, and in helping him to achieve some readjustment; either by definitely repudiating one or other of the goals, or establishing some workable compromise between the conflicting sentiments, or a higher synthesis with new and more stable integration of them.

In yet a third direction the theory of the sentiments is confirmed; namely, by proving itself indispensable for the interpre-

tation of many phenoma of the group life, as I showed in my *Group Mind* (1912). The most indispensable factors of organized group-life are the sentiments of devotion (or loyalty) to groups of all sorts from the family to the nation; patriotism is only one form of many such group-sentiments which, among primitive as among highly civilised societies, form the cement of social life and provide the motivation for the greater part of such human activities as are not purely self-seeking. Here is one of the many ways in which the theory of the sentiments is indispensable to ethical and educational theory.

Finally, the theory of the sentiments finds confirmation in giving us some understanding of those higher forms of activity which are properly called volitional, which express the integrated working of the whole personality, comprizing both character and intellect.

For development of integrated character consists in the growth of a harmonious system of the sentiments, a hierarchical system in which the working of the sentiments for the more concrete objects is regulated and controlled by the sentiments for more general and more abstract and ideal objects, such as devotion to the family, the clan, the occupational or civic group, the nation, or mankind, the love of justice, humanity, liberty, equality, fraternity; and by hatred for cruelty, for injustice, for oppression, for slavery. And volition in the full and higher sense implies that this hierarchy of sentiments culminates in and is presided over by a sentiment of self-regard which, by incorporating in its system these higher abstract sentiments has become an ideal of self, an ideal of character and of conduct to which our daily actions must conform and with which our long-range motivations, our ambition and personal loyalties, must harmonize [1]). The discussion of these higher forms of activity has traditionally been left to the moral philosophers, who have dealt with it in modern times mainly under the head of the theory of values. And the whole history of the discussion of the problem of values, whether moral, esthetic, or economic values and valuation, shows how obscure and confused it inevitably remains, so long as the theory of the sentiments

[1]) Here again the psychoanalytic doctrines are converging toward a very similar conclusion. Freud's recent pronouncements about the ego and the ego-ideal and their controlling role over more primitive functions (those of the so-called *id*) embody essentially the same conclusion in a different terminology. See my *Psychoanalysis and Social Psychology*, London, 1936.

and the growth of sentiments is not understood. For it is by our sentiments of love and hate, of liking and disliking, of respect and admiration, of contempt and scorn, that our valuations are determined, and in them that they have their enduring foundations [1]).

Tastes

I add this final paragraph on a form of affective organization without consideration of which the theory of character remains, as it seems to me, incomplete. In Stout's brief chapter on the sentiments [2]), discussion of the main topic, ‚The Genesis of Sentiments', is preceded by a paragraph of just one half-page headed ‚Differentiation of Interest'. Like all that Stout has written, this paragraph is important and should be read by all interested in our topic. I cite the nuclear sentence: „A child delights in letting things fall on the ground. He does this with an elastic ball and the ball bounces. The bounce itself is impressive and pleasing. Hence in the future, the general interest in letting things fall becomes in the case of the ball a specific interest in making it bounce". This perhaps is not quite accurately expressed. I take Stout to mean, that, out of the more general interest in throwing things down, there is differentiated the more special interest in making rubber balls bounce.

It was not until the year 1926 that (in writing my *Character and the Conduct of Life*) I realized that, in this very concise half-page, Stout has defined a type of enduring interests, lasting likes and dislikes, which cannot be classed with the sentiments and yet are of considerable importance in determining our choices and modes of activity and must be reckoned as constituents of character.

Let us consider a slightly less infantile instance than the one cited by Stout. About the year 1910 a wave of interest in the new game of *Diavolo* swept across the civilized world. The game consisted in keeping a cylinder rotating on a cord and hurling it in the

---

[1]) The active discussion of values and valuation by the Austrian philosophers and economists, Brentano, Ehrenfels, Meinong, von Wieser, Böhm-Bawerk and others, with their uncertain vacillation between hedonic and hormic principles, illustrates vividly the dependence of this group of problems on a right understanding of the sentiments.

[2]) *Groundwork of Psychology*, p. 221.

air, to catch it again on the cord — quite a pretty art. The mere prettiness of the play as a spectacle no doubt was in its favour. But that was not the main ground of the fact that for a time hundreds of thousands of sane and sober people of all ages became devotees of *Diavolo*. They acquired *a taste* for playing this quite trivial game. Our friends, the social psychologists of America, would enlighten us by saying that these people adopted an attitude towards the game. But, though we cannot say the statement is false, we can say that this use of the word ‚attitude' throws no light what-so-ever on the facts, rather less light, that is to say, than does the use of the word ‚taste'. For we do in common speech apply this name to describe many similar instances of acquired liking for particular modes of activity, both bodily and intellectual. Consider the solo parlour-game known as patience. It will be agreed that many thousands of sane persons have a strong taste for playing this game. How is such a taste acquired? In what does it consist? What is the motive which sustains such a course of activity? The ‚connectionist' will tell us (if he is consistent, which of course he never is) that a vast number of reflex connexions have been formed in the nervous system of the patience-player, S—R bonds connecting the visual impressions of the fifty-two cards with particular movements of the hands, and that the patience-player, on sight of the cards, merely is the seat of the exercise of all these connexions: that, for him, is all we know and all we need to know. The pure hedonist will say, he plays for the sake of the pleasure of playing. But whence the pleasure? The ordinary associationist, who pretends to combine connectionism with hedonism, says that the idea of pleasure is associated with the idea of the game; and hence the movements of the player; and perhaps, if this explanation seems too thin, will add that the player is discharging an excess of energy through the habitual movements of handling the cards.

The hormic psychologist is committed to finding the motive for such activity in some desire which ultimately is rooted in and springs from our instinctive propensities. And he will be driven to admit that it is not easy to trace the connection, because it is very indirect and varies from one case to another; but he may suggest that in many, perhaps most, such cases the motive of the player is the desire to escape during times of leisure from anxious, or distressing and fruitless rumination; and that he finds, and is

assured by the wisdom of the ages embodied in wise maxims, that the only effective way to achieve this diversion or distraction is to occupy oneself with some ‚diverting' activity. And we may plausibly say that such a desire springs from the sentiment of self-regard working in the light of much acquired knowledge of what is good and what is bad for the self.

But, if it be agreed that here in very general terms is an acceptable hormic account of the motivation of patience-playing, there still remains the question — Why in any particular case does the patience-player choose again and again this particular form of activity to fill his leisure hours? And we can only say — Because he has acquired *a taste* for this particular kind of activity. And this *taste* cannot be classed as a sentiment. It does not consist in any affective tendency or tendencies fixated upon any one object, any thing, person, group, place, or abstract object such as justice or mercy.

Can we find a cue in considering how tastes are acquired? Undoubtedly, the process of acquisition of a taste seems to require us to give some weight to the principle of habit-formation through repetition; and also to the principle of confirmation of any particular activity by the obscure but very real influence of the pleasure or satisfaction accompanying and accuring from any kind of activity. In general it may be laid down that we are likely to acquire a taste for any form of activity which, from any motive whatsoever, we frequently repeat and which brings us in the main a predominance of satisfaction over dissatisfaction. Some tastes depend upon very complexly founded satisfactions, as e.g. the taste for mountaineering, or for sailing a small boat across the open seas.

Trivial games, such as diavolo and patience, present the problem in its purest form. And we find that those for which a taste is most readily acquired by great numbers of people are those which present us, not only with one final goal of success, such as the top of the mountain, the North pole, or the Davis cup, but such as present from moment to moment a succession of minor goals for which we strive, attaining a mead of satisfaction with the success of each effort. Typical instances are patience, cross-word puzzles, lawn-tennis and golf.

Consider lawn-tennis. The average player cannot hope to win his game more often than he loses. The satisfaction that engenders

his taste for the game is, then, not the satisfaction of winning the game; for that must be fairly balanced by the dissatisfaction accruing from failure to win. But he can and does manage to return the ball successfully more often than he fails to do so. And until and unless he can attain to proficiency of this degree, he will acquire no taste for the game. Indeed, if he should continue to fail more often than to succeed, he will inevitably acquire a positive *distaste* for the game.

This one instance illustrates, I suggest, the universal principles governing the acquirement of tastes and of distastes, in the strict and proper sense of those words. A taste is the accumulated result of repeated successes in any kind of activity; a distaste the result of repeated failures; they are the cumulative effects respectively of the pleasure and of the pain that accrue from success and failure respectively.

The operation of tastes is apt to be complicated by motives of great variety springing from our sentiments; as, notably in games, the desire to improve one's skill or to excell one's rivals; but such motives are extraneous to the tasts.

The motives which determine our goals (and choice of goals), in so far as they are not the crude instinctive impulses, spring from our sentiments; but our tastes very largely determine our choice of the means or modes of activity through which we shall pursue our aims and work towards our goals; and this not only in sports and recreations, but also in the serious activities of life, our breadwinning, our pursuit of glory, our philanthropic efforts. Even if we are wholly set on serving God or mankind, we may and should legitimately choose to do so by way of those forms of activity for which we have a taste; for, fortunately, it is in such ways that we may render the most effective service. In the main we acquire tastes for those forms of activity for which we have natural aptitude; for it is in those that we are most consistently successful.

The foregoing propositions about tastes seem to me true and important, and yet the nature of the acquired and well-established taste seems to me still obscure, still something of a problem. One may say that a taste is a system of habits. But it is more than that; for a mere skill, or acquired facility, in the execution of certain movements is not in itself a taste.

Without pretending, then, to have solved the problem of

tastes, I will, in conclusion, merely point out that tastes owe their importance largely to the fact that they may and do cooperate with sentiments by becoming incorporated in their systems. Without tastes for the forms of activity which promote its ends, a sentiment remains a „mere sentiment", relatively ineffective as a source of motives to sustained activity. But when a sentiment has incorporated a taste, or tastes, and constantly expresses itself through these modes of activity, the whole system becomes not only correspondingly more effective, but also more stable and powerful as a part of the total personality. To adduce a single familiar illustration; the fond mother who has no taste for the forms of activity to which her love for her children naturally prompts her will find those activities something of a burden and a weariness to the flesh; and, though her sentiment may remain strong, she will hardly be an efficient mother. But the equally fond mother who has acquired tastes for the kinds of activity which maternal duty requires of her will find a very complete and satisfying happiness in the execution of those duties; for obligation, sentiment and taste will coincide. This complex but harmonious system of tendencies, activated mainly by the energy of its chief instinctive root, the maternal propensity, will then express itself in a multitude of activities; each of which will bring its own reward, and thus further strengthen and consolidate the whole system.

One difficult question in respect of tastes remains to be touched upon. Do tastes become independent sources of energy? Do they, independently of native impulses and acquired sentiments, furnish motives for purposive activities? Or are they, like motor habits, merely so much structural apparatus through the activation of which the hormic impulses (deriving directly from our native propensities, as in the case of crude fear and anger and disgust, or indirectly by way of sentiments in which the affective dispositions or propensities are organized) work towards their goals.

The question is of considerable theoretical interest, although perhaps, of no great practical importance. For, if tastes do bcome independent sources of motives or desires, we should have in them exceptions to the hormic principle, which regards all motivating energy as deriving from the native propensities. They would have to be regarded as acquired propensities.

The problem may best be approached by considering instances of tastes which are very obviously acquired in the service of some one sentiment. And we may most readily find such relatively mono-motivated tastes in the field of games or sports. The motives that may prompt a youth to take up any particular form of athletic activity are many; and in most cases, probably, several motives coöperate. Yet in some cases the desire to shine, to excell, (or, what is not quite the same, to achieve the highest possible standard of personal development) is undoubtedly far more powerful any than other. In such cases we may see a young man almost fanatically devoted to the practice of his chosen athletic activity, running the mile, or high-jumping, or tennis, or figure-skating, or golf, or boxing. He misses no opportunity for practice, and subordinates to this exercise every other demand of life upon him.

In so far as he is successful in progressing, in beating his own record, in climbing the scale of excellence, in beating opponents of higher and higher standards, his keenness persists; his taste seems to impell him to continue and renew this activity at every opportunity, to furnish the motive for ever new efforts. But there comes a time when he can no longer hope to surpass his own past achievements, when he has reached his high-water mark in that line of effort. In such a case, the taste remains, but the motive for the indulgence of it fails; and, in consequence, the man gives up this particular form of activity, or, at least, loses his keenness for it. Perhaps he merely takes part in and enjoys the game occasionally, motivated by the desire to be sociable or to aid in a charitable or ‚benefit' display; or he becomes a professional player, when his play becomes, in spite of his taste for it, his work.

The question is intimately related to that very obscure problem, the motivation of children's play; for it is clear that, as in the instance cited after Stout at the outset of this discussion (p. 106), playful activity is in very many, if not in all, cases, the exercise of some acquired taste.

ADDENDUM

Since correcting the proof of this article, I have rediscovered in James Ward's *Psychological Principles* (1918) the following footnote: "Unfortunately there is no word in either French or German that exactly corresponds to our word 'sentiment' in this respect; though the German *Gesinnung* comes near to it, as the following passage from Lotze's *Grundzüge der Psychologie* (1881) will show. *Gesinnungen* he there describes 'as permanent dispositions of heart (Verfassungen des Gemüths) due to the fact that once for all a definite value is placed on certain ideational contents (Vorstellungsinhalte): they are therefore — e.g., piety or patriotism — not themselves simple definite feelings (feelings or emotions) but causes whence, as circumstances determine (nach Lage der Umstände), the most diverse feelings may arise'." The volume from which this passage was extracted by Ward has never been accessible to me. But the passage suffices to show that the facts of the kind which are made intelligible by the theory of the sentiments had not wholly escaped the notice of Lotze; that, indeed, he had foreshadowed correctly, however vaguely and briefly, the theory of the sentiments. Lotze, then, anticipated in this matter, it would seem, both Stout and Shand. I add this note by way of correction; for Lotze's name is included in the text among the list of German authors who had not materially contributed to the understanding of affective organization. I included it in that list not without a vague misgiving, due, no doubt, to some earlier reading of the footnote here cited. But I had failed to find anything of the sort in Lotze's other works.

RÉSUMÉ

Il est depuis longtemps reconnu que la vie affective de l'homme normal subit, surtout pendant l'enfance, une sorte d'organisation résultant d'une suite de transformations. On n'a cependant pas pris la peine de formuler exactement les observations faites, ni d'en intreprêter les conséquences avant Kant et Herbart. Ceux-ci ont aussi attiré l'attention sur la question de la différence entre émotions et passions.

L'article ci-dessus traite de ces problèmes et les examine d'une manière critique, ainsi que la littérature qui les concerne, en Allemagne, en France, en Amérique et en Angleterre. On constate que, pendant le XIXe siècle, peu de progrès ont été réalisés dans ce domaine important de la psychologie, surtout à cause de la tendance dominante à ne pas tenir compte de la structure mentale, ou de la décrire uniquement par l'application du terme „idées". L'„Essai sur les passions" de Ribot, montre peu de progrès sur Kant et Herbart. Depuis le commencement du XXe siècle, il s'est produit un revirement dans ce domaine des investigations, surtout grâce à la doctrine psychoanalytique des complexes, à la théorie de Stout sur les „sentiments", à l'étude du caractère, de ses tendances, de son développement, de sa différentiation, et de son organisation systématique dans un champ de plus en plus vaste.

ZUSAMMENFASSUNG

Dass das Affektleben des Menschen eine Art Umformung durchmacht, besonders während der Kinderjahren, ist seit langem bekannt. Man hat aber nicht die erforderliche Mühe genommen die Beobachtungen richtig darzustellen und die tatsächlichen Ergebnisse zu interpretieren.

Auch das Problem über den Unterschied zwischen Affekten und Leidenschaften, obgleich es in der philosophischen Litteratur bereits öfters aufgeworfen ist, wurde nicht mit der nötigen wissenschaftlichen Exaktheit untersucht.

Der obige Aufsatz will diese Fragen prinzipiell behandeln und die diesbezügliche deutsche, französische, englische und amerikanische Litteratur darauf hin einer Kritik unterziehen. Es zeigt sich, dass in diesem wichtigen Gebiete der Psychologie während des 19ten Jahrhunderts wesentliche Fortschritte nicht nachzuweisen sind, vor allem wegen des herrschenden Gebrauchs, die psychischen Strukturen ausser Acht zu lassen, sie lediglich durch Anwendung des Begriffs „Ideen" zu beschreiben.

Ribot in seiner „Essai sur les Passions" ist kaum weiter gekommen

als Kant und Herbart. Seit der Jahrhundertwende ist auch eine Wendung in diesem Forschungsgebiet eingetreten, hauptsächlich durch die psychoanalytische Lehre von den Komplexen und durch Stouts Theorie der „sentiments" und durch das Stadium des Charakters, seine Dispositionen, sein Wachsen, seine Differenzierung und seine Eingliederung in immer umfasserenderen Systemen.

RE-EXAMINATION OF IMPLEMENT-USING BEHAVIOR IN A CEBUS MONKEY AFTER AN INTERVAL OF THREE YEARS

HEINRICH KLÜVER

Otho S. A. Sprague Memorial Institute and Division of Psychiatry, University of Chicago

Experimental studies on the ability of animals to utilize objects as "tools" have in recent years played a great rôle in analyzing the mechanisms involved in "learning" or "intelligence" and in attempts to throw light on the psychology and pathology of adaptive actions. The data obtained have also been of interest in connection with various phylogenetic problems (15). Special significance has been attached to the question whether or not the "tendency to construct implements, or so to modify environment that objects shall acquire instrumental value" (14) occurs in animals below the anthropoid apes. In 1929, Yerkes and Yerkes (14) reached the conclusion that instrumentation, that is, the utilization of objects as tools, indicates "a great gulf between monkey and ape."

Bierens de Haan (2) and I (11), independently, showed that this gulf apparently does not exist and that the implement-using behavior of at least some monkeys is not essentially different from that of chimpanzees. The conclusions of Bierens de Haan were based on work with a female Cebus monkey (*Cebus hypoleucus* Humb.) which was tested in 127 experimental situations. Unfortunately, his monkey died a few days after completion of the experiments. It is of interest that the animal I studied was also a female monkey belonging to the same genus; the exact species could not be determined (probably *Cebus fatuellus*). The reactions of this monkey to 207 experimental problems, designed to test her ability to utilize objects as tools, have been reported in considerable detail (cf. description of experiments with Cebus

monkey P.-Y. on pp. 259–292 in 11). These experiments were performed from January to July, 1931, but most of the data were obtained during February, March, and April .

The present paper deals with the results of a re-examination of the implement-using behavior of this monkey (Cebus monkey P.-Y.) after a period of three years during which the monkey was not subjected to experimentation of any kind. All of the data obtained in the second series of experiments were secured during February, March, and April, 1934. The following facts are of prime importance in relation to these re-tests:

1) After the death of the monkey of Bierens de Haan, monkey P.-Y. was, as far as published records indicate, the only monkey in which an all-around investigation had clearly demonstrated forms of instrumentation as complex as those found in anthropoid apes.

2) Even in the many studies of implement-using behavior in anthropoid apes, no re-tests, at least to my knowledge, have ever been made after a period of several years during which the animal was not subjected to any kind of experimentation.

3) Instrumentation involves so many and diverse functions that at the present time we are still far from an understanding of the conditions influencing success and failure in solving problems requiring the utilization of objects as tools and of the factors determining variability of performance and the types of adjustment made by the animal. We are in need of further data which may throw light on the problem of how various properties or changes in the "outer field" on the one hand, and conditions in the organism on the other hand, affect various aspects of implement-using behavior. It is necessary not only to analyze special types of problems, as, for instance, "detour" problems or problems requiring for their solution the use of only one object (6–8), but also to work with a widely varied assortment of tests.

4) A re-examination of implement-using behavior after an extended lapse of time seems to be of special significance in the light of certain data obtained in investigations of "sensory" and "motor" factors. Undoubtedly, the instrumental use of objects, at least in sub-human primates, involves "general modes of adjustment" rather than a number of specific reactions. It has been found, for instance, that a chimpanzee, which is able to use a certain stick to obtain a piece of banana beyond reach, will also

use a large number of other objects to secure food and other objects. I have shown that certain general modes of reaction exist also in the sensory field (equivalence of stimuli in various sense fields; cf. 11). More recently, I was able to show that monkeys trained, for instance, to react positively to the heavier of two weights will react positively to the heavier of two objects even after several years despite the introduction of marked changes in the relative and absolute weight and in other properties of the stimuli. It must be borne in mind, however, that not only the tendency to react in terms of the "heavier than" relation but also the retention of this tendency were demonstrated by using a *learned* reaction to *specific* stimuli. In this case retention implies the intactness of a general mode of reaction previously established through training.

In the case of implement-using behavior, on the other hand, we are not dealing with reactions established in the laboratory by letting the animal go through a certain performance hundreds or thousands of times. In fact, practically all investigators have confined themselves to presenting successive problems of increasing difficulty, and it is in this connection of interest that Köhler observed a certain deterioration of performance in chimpanzees if the same problem was repeatedly presented (12). The various adjustments of which Cebus monkey P.-Y. was capable in 1931 indicated that if any learning had taken place before or during the experiments, it had established, not a number of specific reactions, but certain generalized modes of response.

It seems clear that such general modes of adjustment do not exist in a vacuum. The utilization of objects as tools presupposes that the animal is able to recognize not only a number of significant relations, but also whether or not a given object possesses certain properties at all. It is for this reason that the previous experience which an animal has had in handling and manipulating particular objects may influence the level of adjustment at a given moment. Whether or not at a given time certain adjustments can be easily made, or even made at all, is partly determined by the kind and number of properties which have played a rôle in the animal's previous experience. The realization that something "movable" or "breakable" is needed in the solution of a problem may be of no help if the animal, either in the past or in the course of the experiments, could not learn that certain of the

available objects have the properties of being "movable" or "breakable." Conversely, the animal may recognize that a given object is "smaller than," "heavier than," or "more distant than" another one, and yet fail to appreciate the significance of these relations for the solution of the problem. It is necessary, therefore, to determine whether or not the general modes of adjustment as found, for instance, in the instrumental use of objects in Cebus monkey P.-Y. involve reaction patterns which deteriorate with the passage of time.

5) Data apt to throw light on the functions involved in instrumentation are of special interest in view of the recent finding (4, 9) that bilateral injury of the prefrontal areas in chimpanzees causes severe deterioration in so-called multiple stick problems. This has been interpreted as an impairment of the ability to adjust to situations involving a temporal organization of behavior. Nevertheless, the question remains whether deterioration in multiple tool problems or inability to solve such problems occurs, not because the problems require adjustments in terms of temporal relations, but because of the influence of certain non-temporal characteristics in the stimulus situation.

The life history of monkey P.-Y. previous to the experiments is fairly well-known (cf. pp. 298–299 in 11). At the time of experimentation in 1931, her age was estimated to be between seven and eight years, and, therefore, during the second series of experiments, she was presumably ten or eleven years old. During the three years intervening between the first and second series she was kept by herself in the same experimental room used in 1931. She was not confined to a cage but was tied to the radiator below Window 2 indicated in Fig. 1. Emphasis should again be laid on the fact that during this three year period she was not subjected to any kind of experimentation.

The second series of experiments was conducted in the same room used in 1931 [1]). This room was 8 m. long and 4.90 m. wide. Door 2 (cf. Fig. 1), which was equipped with a one-way vision screen, led to the experimenter's room so that he could easily observe the reactions of the animal without being seen. In almost all experiments, the monkey was tethered to an iron post near the radiator in Corner A by means of a cord which was attached to the

[1]) Especial thanks are due to Dr. Paul Schroeder, Director of the Institute for Juvenile Research, who made it possible for me to carry on this work at the Institute.

belt around her waist. The length of the leash was such that P.-Y. could reach objects 2.65 m. from the iron post.

In the case of each experiment the problem was first set up, and then the animal was taken to the experimental room where she was tied to the iron post. As a rule, the experimenter left the room immediately afterwards. In certain experiments, however, where only a few seconds elapsed between the moment the monkey was free to react to the situation and the moment the food was obtained, the experimenter merely stepped behind a screen in the experimental room and observed from there. Observations of the various reactions of the monkey were taken down in shorthand.

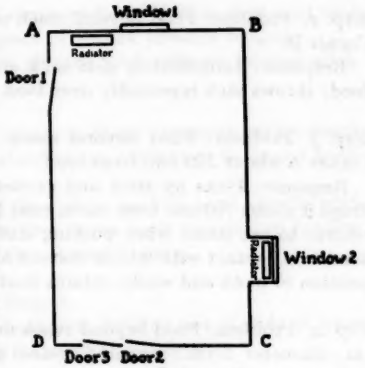

Fig. 1

The types of problems presented in 1934 were the same as in 1931. In addition, a number of variations were introduced. Although the monkey was in fairly good health she was obviously not as strong as in 1931 and could not break, move, or tear objects as easily as in the first experimental series. This fact had to be taken into consideration in the setting up of problems. Care was taken that the animal whenever tested was only moderately hungry.

In the following descriptions the various experiments are recorded in chronological order. Unless stated otherwise, the food constituting the "goal" was always a piece of banana. The experimental room was empty except for the objects mentioned in the records. "Right" and "left" indicate positions as they appear to the monkey.

EXPERIMENTAL DATA

February 10, 1934. 2:00 P. M. *Experiment 1.* Problem: Food beyond reach on floor; T-stick near food and within reach of monkey (T-stick

consisting of 51 cm. long round stick with a cross piece, 3 cm. wide and 10 cm. long); cross piece towards food.

Response: Monkey at once grasps T-stick, places cross piece behind banana, and rakes in food (2 sec.) [1]).

Exp. 2. Problem: Food beyond reach on floor; sack lying on floor in Corner B.

Response: Immediately gets sack and carries it to point opposite food; throws sack repeatedly over food, whips food within reach.

Exp. 3. Problem: Food beyond reach on floor; T-stick standing in Corner A about 320 cm. from food.

Response: Picks up stick and carries it in direction of goal, then drops it about 100 cm. from food; runs towards food but immediately returns to get stick; when pushing stick towards food for first time, hand is in contact with middle instead of end of stick; at once corrects position of hand and easily obtains food.

Exp. 4. Problem: Food beyond reach on floor; round stick (length 70 cm., diameter .5 cm.) standing against wall under Window 1.

Response: Runs from Corner A towards Window 1 and, without stopping to seize stick, continues to a point opposite goal; looks at food but does not reach for it; while running back towards Window 1 turns head several times to look at food; picks up stick with left hand and drags it along floor towards food; repeatedly "contacts" food with stick, moves stick towards body and at the same time slightly to the right or left; uses either right or left hand in holding stick; works calmly and obtains food by sweeping movements towards the left (45 sec.).

Exp. 5. Problem: Food beyond reach on floor; round stick on floor parallel to and very near wall BC.

Response: Runs in a curve from Corner A to point opposite food and, without stopping, to stick; picks up stick and drags it with right hand along floor towards food; in working with stick uses right or left hand; occasionally presses stick down on food; obtains food by sweeping movement towards the right.

Exp. 6. Problem: Food beyond reach on floor; T-stick and round stick within reach, cross piece of T-stick towards food; sticks parallel to each other, their ends at about the same distance from the food; T-stick too short to be used for obtaining food.

Response: At once runs towards sticks and, after a period of wavering, slightly touches T-stick without grasping it; fails in first attempt to draw in food by means of round stick; grasps T-stick with left hand

[1]) Time in brackets always indicates time elapsing between presentation of problem and completion of last mentioned reaction of monkey.

and stretching herself to the limit almost touches food with it; drops T-stick and again uses round stick; while working with round stick suddenly seizes T-stick which is in the way and energetically throws it back of her; obtains food by means of round stick (36 sec.).

Exp. 7. Problem: Food beyond reach on floor; T-stick near food and within reach of monkey, cross piece of T-stick towards animal.

Response: Grasps T-stick and obtains food without turning stick around (30 sec.).

Exp. 8. Problem: Food beyond reach on floor; wire hook within reach near wall BC (diameter of wire about .5 cm.; height of U-shaped hook about 17 cm.).

Response: Looks around and then picks up wire hook; works with curved end of hook towards her, then turns hook around and holding one of the ends with one hand rakes in food (8 sec.).

Exp. 9. Problem: The same as Exp. 8.

Response: At once picks up hook and, holding one of ends of hook towards her, uses it successfully to obtain food (9 sec.).

Exp. 10. Problem: Food beyond reach on floor; T-stick beyond reach and about 50 cm. to the left of food; wire hook within reach of monkey.

Response: At once grasps wire hook and uses it to pull in T-stick (21 sec.); obtains food by means of T-stick (1 min. 6 sec.).

Exp. 11. Problem: Food beyond reach on floor; T-stick beyond reach and to the right of food; bottle brush (40 cm. long) on floor near wall BC.

Response: Examines bottle brush and then goes over to warm radiator; after a while picks up brush and carries it in direction of T-stick, drops it several times on way; obtains T-stick by means of bottle brush; uses stick and obtains part of food by sweeping movements from the right to the left; eats banana and then uses stick to get rest of food.

February 14, 3:15 P. M. *Exp. 12.* Problem: Food beyond reach on floor; T-stick near food and within reach of monkey, cross piece towards food; near wall BC newspaper on floor, held down and partly covered by heavy box; round stick and sack lying on "white" enamel top table (height of table: 78 cm.; size of top: 63 × 103 cm.); objects on table within reach of monkey; table about 100 cm. from wall AD.

Response: Runs from wall AB towards T-stick deviating from a straight route, now to the right and now to the left; grasps T-stick with right hand and with one movement pulls banana within reach (5 sec.).

Exp. 13. Problem: The same as Exp. 12.

Response: Runs from wall AB in a continuous curve first towards

the left — but does not touch newspaper — and then towards the right, looks up at table, then comes forward (that is, towards wall CD) to pick up T-stick; draws in food with one movement of stick.

Exp. 14. Problem: The same as Exp. 12, except that cross piece of T-stick is toward animal; T-stick about 100 cm. to the left of food.

Response: At once grasps T-stick and attempts to draw in grape without turning stick around; when grape rolls almost beyond reach, starts "talking" excitedly (as "talking" we have previously designated a certain form of bodily and vocal expression frequently observed and easily identified in this monkey: "her eyes are sparkling, her teeth bared, at intervals she utters very short and rather high sounds, her body seems tense, frequently whole body jerks towards object to which she 'talks' without actually moving from spot, at times strikes object or floor once or twice with hand" [11]); turns back to food and pulls repeatedly at cord to which she is tied; "talks" to table, then looks around in room; again turns towards table but does not climb up, pulls at one of legs; runs to newspaper and without touching it runs over towards wall AB where she finds some fragments of food on floor; (experimenter adds four grapes): at once comes forward, grabs T-stick and without turning it around uses it effectively to obtain food.

Exp. 15. Problem: Piece of banana suspended beyond reach from horizontal bar (bar 194 cm. above floor, parallel to and about 280 cm. from wall AB; point on bar from which food is suspended is opposite middle of radiator in Corner A); white table directly below banana; round stick, 45 cm. long, on top of table, not visible from floor; T-stick on floor within reach; either round stick or T-stick can be used for knocking down food.

Response: Looks around in room and then slowly walks towards T-stick; gazes intently at food and at other objects in room; lies down and continues looking around; for several minutes sits near T-stick without touching it, then gets up and looks intently at T-stick and food; slowly walks around repeatedly looking in direction of food; picks up tiny bits of material from floor near wall AB; for several minutes stands near one of the legs of table, then climbs up high enough to put one hand on table top, climbs down again; sits near leg of table and quietly looks in all directions and at various objects, at times turns back towards table, now and then looks at food, otherwise hardly moves for 20 minutes; examines fur and then walks slowly towards wall BC but soon returns to point near table and looks at food; climbs up on table but not high enough to see table top, climbs down again; after a while goes over to another leg of table and repeats same performance; sits near table and again looks at food; picks up tiny bits of material from floor near radiator; looks repeatedly at food; slowly returns to table and this time climbs up high enough to see stick on table top, looks up at food, grasps stick and climbs down with it; drops stick on floor (50 min.); finally walks towards radiator, along walls AB and BC and then again looks at food (60 min.: experiment discontinued).

Exp. 16. Problem: Food suspended beyond reach above floor; gunny sack and short round stick (length 40 cm.) on floor directly beneath food; long round stick (length 65 cm., diameter about .3 cm.) on floor 200 cm. off center, that is, from point beneath food; white table in same position as in Exp. 15; sack too heavy and 40 cm.-stick too short to be used by animal; food can be obtained only from floor, and not from white table, by using 65 cm.-stick.

Response: Looks around and then walks in direction of long stick, the route taken representing a wavy curve; climbs up on table and looks around; runs back and forth in room, movements become quicker, repeatedly looks at food; grasps short stick, raises it towards food but does not attempt to strike; looks around room, goes over to wall AB and then returns and seizes short stick again, drops it immediately; walks over and grasps long stick and drops it; climbs up on white table although not high enough to see top, climbs down again; runs over to radiator; pushes long stick around on floor, finally to a point beneath food and there drops stick; looks around in room; runs back and forth and collects bits of material lying on floor; sits down on sack and examines fur; pushes long stick around; grasps short stick and looks at food but does not raise stick; for a while runs around in room and looks at various objects; suddenly rushes to long stick, grasps it with right hand, looks at food, but does not raise stick; leaves stick and again runs around, pulls at sack, then at table; carries short stick towards table and drops it (30 min.); lies down on floor and for several minutes looks intently around, now and then sits up; walks around and occasionally looks at food; grasps long stick as if to use it but makes no attempt to strike (45 min.); for a while walks around and touches or pulls at various objects; excitedly strikes floor several times with left hand and then suddenly grasps long stick, raises herself and knocks down food (56 min. 30 sec.).

Exp. 17. Problem: The same as Exp. 16.

Response: Runs towards table, touches long stick which got entangled in cord to which she is tied; runs towards wall AB; looks intently at food; seizes long stick, raises herself, and knocks down food (8.2 sec.).

February 17, 2:00 P. M. *Exp. 18.* Problem: Food suspended beyond reach above floor; round stick (length 65 cm.) lying on floor, 100 cm. off center.

Response: Looks around; for a while runs around and examines fragments of material on floor; suddenly, coming from wall BC, runs to stick (4 min.), picks it up and rushes to point beneath food, immediately uses stick successfully for knocking down food.

Exp. 19. Problem: The same as Exp. 18.

Response: Runs around and collects fragments of material lying on floor; seizes stick and uses it successfully for obtaining food (31 sec.); while working holds stick now with one and now with both hands.

Exp. 20. Problem: Food beyond reach on floor; T-stick lying on chair standing before Window 1.

Response: Runs towards food but does not reach for it; runs back to chair and pulls stick to floor; while running towards food pushes stick along floor; uses it successfully by placing cross piece behind food and then pulling in (40 sec.).

Exp. 21. Problem: Food and T-stick beyond reach on floor; on window sill of Window 1 a wire ring (diameter of ring: 16.5 cm.; diameter of wire: about .5 cm.); ring can be used for obtaining T-stick.

Response: Runs in a curve from wall AB to T-stick and reaches for it; runs back in curve towards wall AB; again runs over to T-stick and back to wall AB; from a point near wall AD looks around for a while, scratches herself; runs towards goal; climbs up on chair (2 min. 40 sec.); from Corner B runs over towards goal; runs along walls BC, AB and AD towards goal, from there runs straight towards chair standing before Window 1 and climbs up on it, raises herself twice on hind legs; runs around in room, frequently runs over towards goal and reaches for it; looks at ring, climbs up on chair (7 min. 40 sec.) and looks out of window; climbs down again (9 min. 10 sec.); runs straight from window towards goal; runs around in room, apparently searching for objects; (15 min.: experiment discontinued).

Exp. 22. Problem: The same as Exp. 21, except that wire ring is lying on floor in Corner A.

Response: Runs towards food but does not reach for it; looks around and notices ring (20 sec.); uses it to obtain T-stick; uses stick successfully for obtaining food (41 sec.).

Exp. 23. Problem: Food beyond reach on floor; T-stick lying on white table.

Response: Looks around in room and then climbs up on table (10 sec.); throws T-stick to floor; runs with stick towards food frequently deviating from direct route; uses stick to obtain food (36 sec.).

Exp. 24. Problem: Food beyond reach on floor; sack lying on table within reach.

Response: Looks around, climbs up on table and at once climbs part way down again; while looking at food pulls sack with left hand to floor; pushes and pulls sack towards food; whips part of food within reach (1 min. 10 sec.) and eats it, then whips rest of food within reach.

Exp. 25. Problem: Food beyond reach on floor; near wall AB newspaper on floor, held down and partly covered by heavy box.

Response: Runs from point near wall AD in a curve towards newspaper; looks around in room; collects fragments of material lying on floor; suddenly runs towards goal and stretching herself reaches for the food; runs to newspaper and lifts some of the sheets; runs towards wall

AB; climbs up on table and looks around; climbs down and runs over to radiator; searches around in Corner A; (6 min.: experimenter adds half a banana): walks to point opposite food and then looks around; on way to radiator ignores newspaper; sits for several minutes before radiator; (15 min.: experiment discontinued).

Exp. 26. Problem: Food beyond reach on floor; a chain lying in a heap on floor before radiator near wall AB.

Response: At once grabs into heap and pulls towards goal; chain gets entangled with cord to which she is tied; tries to disentangle chain and succeeds in pulling end of chain to point near food; throws chain as far as possible and each time pulls back, does not make use of loops; obtains food by repeatedly throwing end of chain over food and then pulling back (2 min.).

February 21, 2:00 P. M. *Exp. 27.* Problem: Food beyond reach on floor; T-stick near food and within reach; sack lying in Corner B.

Response: At once picks up stick and rakes in food (8 sec.).

Exp. 28. Problem: Food suspended beyond reach above floor; round stick (length 65 cm.) on floor, 100 cm. off center; sack lying in Corner B.

Response: Walks over to stick, touches it and looks around; runs around in room; stands near wall AD and gazes at food and various objects in room (2 min.); stands beneath food and looks up, then gets stick and raises it slightly towards food (2 min. 15 sec.), walks towards wall AB and then to Corner B but does not touch sack; picks up bits of material on floor near wall BC; looks at food; picks up stick and attempts to strike food but does not raise herself high enough (3 min. 30 sec.); pulls sack along wall BC and then towards goal, drops sack near goal; runs towards radiator constantly looking around; seizes stick and raises it so that one end of stick rests on floor (7 min. 30 sec.); looks at sack and then at food, walks over to sack; while looking at goal suddenly pushes stick along floor towards wall AD (9 min.), drops stick; sits down in Corner A and collects fragments of material lying on floor; after about 3 minutes gets up and walks towards food, stops and looks at food; walks in direction of sack, then picks up stick and uses it successfully for knocking down food (16 min. 25 sec.).

Exp. 29. Problem: The same as Exp. 28.

Response: Walks from radiator in curve towards stick, picks it up and walks to point beneath food; uses stick successfully in obtaining food (35 sec.).

Exp. 30. Problem: The same as Exp. 28.

Response: At once picks up stick and strikes food; obtains food within 10 seconds.

Exp. 31. Problem: The same as Exp. 28.

Response: Walks from wall AB forward as far as leash (cord) will

permit; walks towards stick, picks it up, and uses it successfully in obtaining food (18 sec.).

Exp. 32. Problem: Food suspended beyond reach above floor; stick beyond reach on floor; sack lying on floor in Corner B.

Response: Walks along wall AD and then in direction of stick, does not reach for stick; walks to Corner B (33 sec.); stands on radiator and looks around; runs around near goal and several times raises herself to obtain food by direct reaching, does not quite succeed in touching food; walks towards stick and looks at it but makes no attempt to reach for it; fetches sack (2 min. 10 sec.) and pulls it towards goal, looks at food, jerks whole body as if to reach for food; runs in direction of stick and again towards goal, looks at food; stands in Corner A and gazes at food; runs to point exactly beneath food and looks around; walks towards wall BC and then sits down near radiator and examines fur (6 min. 40 sec.), several times looks up at food; gets up (11 min.) and slowly looks in all directions, then walks towards stick; pulls at sack while standing on it; walks towards radiator and then towards wall AD, looks around; tries to obtain food by direct reaching; pushes sack towards goal, while standing on sack makes half-hearted attempt to reach food directly; runs towards wall AD and back to sack, stands on sack; runs towards wall AD, again and again looks at food; from radiator runs forward towards stick (16 min. 50 sec.); runs over to sack and handles it in such a way that it forms a bundle, steps on it and obtains food by direct reaching (17 min. 43 sec.).

Exp. 33. Problem: Food suspended beyond reach above floor; cardboard box (41 × 23 × 28 cm.) 200 cm. off center, standing between goal and wall BC.

Response: Walks over to box but does not touch it; stands beneath food and looks at it; runs towards wall AB, then turns around and looks at food; looks in all directions and then walks to point beneath food, makes no attempt to raise herself on legs; walks to box, inspects it, and apparently smells it; runs around in room; lies down before radiator, chin on floor (4 min. 20 sec.), looks around, seems very tense; raises herself to sitting position (7 min. 40 sec.), lies down, chin on floor; raises herself but at once lies down again (14 min. 24 sec.); hears noise and raises herself to sitting position (16 min. 30 sec.), then lies down again, chin on floor (19 min. 7 sec.); raises herself, gets up (22 min. 30 sec.), scratches herself, walks in direction of goal, looks at food, sits down; walks towards box, picks up fragments of material lying on floor; while looking at goal, moves hand towards box as if to give it a push but does not touch box; walks to point beneath food, lifts leash towards food; walks towards radiator and sits down again (28 min. 45 sec.), but at once gets up again and walks towards box, then back towards Window 1; lies down before radiator, chin on floor (29 min. 30 sec.), soon gets up and examines fur; (35 min.: experimenter attaches additional piece of banana): at once monkey becomes more lively and

runs towards goal, looks around, walks towards box but ignores it; walks towards wall BC, turns around and looks at food; stands before Window 1 and looks around; stands before Door 1 or near wall AD and looks at food; walks over to wall BC and Corner B, repeatedly looks at food and raises leash towards food; runs around and visually examines floor of room, picks up bits of material from floor; (45 min.: experiment discontinued).

Exp. 34. Problem: Food suspended beyond reach above floor; stick beyond reach on floor; sack on floor near wall AB.

Response: Walks towards stick and then proceeds in oscillating curve towards sack; pulls sack to point opposite stick, throws sack over stick (38 sec.); works until stick is whipped within reach (1 min. 40 sec.); at once uses stick successfully for knocking down food (2 min. 3 sec.).

Exp. 35. Problem: Food suspended beyond reach above floor; sack beyond reach and out of sight lying on platform below ceiling; a string attached to sack hangs down from platform and can be reached from floor; stick on floor beyond reach.

Response: Walks towards string and looks up; looks at goal and then at stick; repeatedly looks at string, food, and stick; walks towards wall AB and utters high-pitched sounds, looks at food; walks towards Door 1 and along wall AD to point beneath food; walks in direction of stick; looks intently around; runs around in room, stops before radiator, food, stick, and finally before string hanging down from platform, does not touch it; collects tiny bits of material before radiator, repeatedly looking at food (5 min.); picks up leash and moves it with hand in direction of goal; stands before stick and looks at it; suddenly runs towards string and pulls slightly downward, at the same time looking towards platform; runs back and forth between string and stick, occasionally picking up fragments of material from floor; stands beneath food and makes half-hearted attempt to raise herself on legs; walks around in room; suddenly runs towards string (9 min. 20 sec.) and energetically pulls downward: pull not sufficient to pull sack off platform; runs towards stick; stands beneath food and then walks towards wall BC; again stands beneath food, then walks over to string and, while looking at goal, runs with string in direction of food: sack falls to floor; pulls sack towards stick but stops on way to run towards food; returns to sack and tries to whip stick within reach, but does not immediately succeed; pulls sack to point beneath food, examines sack, grabs string of sack with left hand and lifts it towards food; runs with end of string in hand towards stick and thus pulls whole sack somewhat nearer stick; while sitting near stick bites again and again into string, turns back to stick; after about 6 minutes of biting and munching gets up and looks at stick and food and then walks towards food; runs around near food, frequently looking up; makes feeble attempt to raise herself on legs while standing beneath food; runs towards sack, then throws string over stick and pulls back: stick moves slightly; pulls

sack towards food and again back towards stick; again works with string to obtain stick and after several attempts succeeds in pulling stick within reach; at once carries stick to point beneath food and uses it successfully to knock down banana (11 min. 41 sec.).

February 22, 2:00 P. M. *Exp. 36.* Problem: Food suspended beyond reach, 74 cm. above floor; sack beyond reach and out of sight lying on platform below ceiling; a string attached to sack hangs down from platform, end of string beyond reach and forming a loop 74 cm. above floor; round stick (length 65 cm.) on floor beyond reach; T-stick (length 25 cm.) lying on floor below Window 1, T-stick attached to 240 cm. long string which is tied to a post before wall BC; T-stick can be used only for pulling down sack; round stick can be obtained by means of sack.

Response: Looks around and notices string and T-stick; walks slowly from Corner A in direction of round stick, stands before stick and looks at it; looks at food, then walks to point beneath food; walks towards round stick as far as leash will permit, does not reach for stick; picks up T-stick and pulls it towards food as far as possible, drops T-stick; stands beneath food and looks up; runs towards T-stick and then towards string hanging from platform, looks up towards platform; again pulls T-stick in direction of food and then in direction of round stick lying on floor, stands beneath food and looks around, glances at food and round stick; picks up T-stick and runs around in an arc (that is, along the periphery of a circle the center of which is the point to which the string of the T-stick is tied); looks towards platform; runs with T-stick towards food and then towards round stick, repeats this several times, pulls string of T-stick taut; looks around; standing near T-stick glances in direction of platform and round stick; walks towards wall AD, sits down and looks first at food and then in all directions; again looks at goal; gets up (12 min.) but does not move from spot, very slowly looks around for about 10 minutes, performs only head- and eye-movements; walks towards food, again remains almost motionless, after 3 minutes raises herself on legs but makes no attempt to reach for food; walks over to T-stick and while looking at food touches stick; stands beneath food and reaches for it; stands below string hanging from platform and looks up; pulls T-stick to point near string hanging from platform, but does not use stick; walks towards wall AB and then towards round stick; suddenly grasps T-stick as if to use it for pulling down string hanging from platform, then drops stick; raises herself beneath food and lifts leash towards food (28 min.); stands near string hanging from platform, looks up; runs towards food and then towards round stick, looks at it with teeth bared; in passing touches T-stick and then walks along wall AD towards radiator and then towards food; makes feeble attempt to reach food directly; touches T-stick while looking at string hanging from platform; attempts to bite through string to which T-stick is attached (31 min. 20 sec.), gnaws at string near point of attachment to T-stick; stops biting (34 min.), throws stick repeatedly on floor; faces goal and continues biting, finally

succeeds in biting through string (35 min.); at once tries to use T-stick to strike food, but does not succeed in touching food with stick; drops T-stick and after a while tries again, but again fails; pulls at string to which T-stick was attached; after another attempt to strike food with T-stick runs over towards round stick and pulls round stick within reach by means of T-stick; at once uses round stick successfully to knock down food (36 min. 10 sec.); cracks nut, which constituted part of the food, by pounding it on floor.

Exp. 37. Problem: Food suspended beyond reach above floor; sack beyond reach and out of sight on platform below ceiling; a string attached to sack hangs down from platform, end of string forms loop beyond reach of monkey; round stick beyond reach on floor; cardboard box (cf. Exp. 33) standing on floor, 100 cm. off center; food can be obtained either by pushing box to point beneath food or by obtaining first sack (box to be pushed beneath string hanging down) and then stick.

Response: Stands between food and string hanging from platform, looks around; notices round stick and then walks towards Window 1 passing box; stands near wall AD and gazes at food; walks towards box and then towards round stick as far as leash will permit, but does not reach for stick; moves box slightly in direction of goal (1 min. 35 sec.); looks towards string and then, while looking in all directions, walks towards round stick, but does not reach for it; stays a while in Corner A and then walks towards box, picks up fragments of material lying on floor; sits down in sun and examines fur several minutes, gets up and glances from goal to round stick and other objects in room; finally walks to point near food; walks around and repeatedly looks at food; walks towards round stick but does not reach for it; sits down, examines fur, and picks up bits of material lying on floor; reaches in direction of round stick; runs around in room, frequently stops to examine fur or pick up material from floor; sits not far from round stick; looks around and even inspects ceiling; slowly walks towards goal and beyond it to Door 1, again and again looks at food or other objects in room; stands beneath food and then walks over to box (21 min.) and pushes it first in direction of stick and then, while looking at goal, slightly towards food, then continues pushing it to point to the right of round stick (23 min.); walks over towards wall BC and then along wall AB towards radiator; suddenly runs to point beneath food and then to box, gives it a push so that box comes in contact with round stick; leaves box and walks around in room occasionally picking up bits of material from floor; walks along walls BC and AB towards Corner A and then, frequently looking at goal, towards box; pulls box slightly back, looks at stick, moves box repeatedly until it stands about 20 cm. to the right of stick; walks towards Window 1, looks at string hanging down and at food; walks to Corner B; walks towards box and moves it still farther away from stick (37 min.); picks up fragments of material lying on floor, finally stands beneath food and raises herself

on legs, but does not reach for food; stands near wall AD and gazes at food; walks towards Corner A and along wall AB; stands beneath string hanging from platform and looks up; walks towards round stick but does not reach for it; touches box and looks at food; walks towards wall AD and then returns to point beneath food, raises herself on hind legs; grabs leash and uses it to "draw" on floor (cf. p. 304 in 11), looks repeatedly at food; walks to point beneath food and raises herself on hind legs (45 min.); grasps cord to which she is tied and manipulates it in various ways; sits below food for several minutes playing with cord and looking at food or stick; walks towards wall BC and stops below string hanging from platform, looks attentively around; finally returns to point beneath food and sits down: body seems tense; looks around for several minutes, finally gets up (64 min.), looks towards string hanging from platform, then walks over to stick, but does not reach for it; runs towards food, then towards box and touches it, puts thumb of right hand in mouth and looks around, then walks towards food and raises herself on hind legs; again runs around in room, at intervals looks at string hanging from platform, at stick, at box, and at food; picks up fragments of material lying on floor; sits down beneath food (69 min. 30 sec.) and repeatedly looks up; gets up and walks around and finally pulls twice at box; raises herself towards food but does not reach for it; touches electric conduit before wall AD; walks towards wall BC and then to point beneath food, raises herself, then strikes floor with hand several times, again raises herself; walks towards box and then towards Door 1, looks at food; returns to box but does not touch it; walks towards Window 1; quickly walks over to point beneath food, raises herself on legs and "rotates" beneath food supported by tail and legs, but makes no attempt to reach for food; walks towards wall AD and then towards radiator, bites into leash; pushes box to point near food (80 min.), then sits down exactly beneath food examining fur of tail; at intervals looks at food; runs around in room looking at various objects and even inspects ceiling; suddenly pushes box to point beneath food, steps on it, and grasps food (93 min. 20 sec.).

February 25, 4:30 P. M. *Exp. 38.* Problem: Glass container (18 × 28 × 5.5 cm.) with food inside, lying on floor; container attached to wall BC by means of wires and its opening closed by cardboard box.

Response: Looks around and notices a string hanging from horizontal bar (in previous experiments string had been used for suspending food); climbs up on white table standing in room (28 sec.), looks around; climbs down again (1 min. 40 sec.); walks towards wall BC; stops before jar and notices food (2 min. 45 sec.); at once pushes cardboard box aside and obtains food (3 min. 29 sec.).

Exp. 39. Problem: The same as Exp. 38, except that wooden box instead of cardboard box is shoved against opening of glass container.

Response: Looks around in room; walks towards radiator and then towards glass container and stops (35 sec.); runs several times around

box and container, pulls at glass while standing on it; runs around in room, then pushes and pulls at wooden box and finally succeeds in dislodging box sufficiently to obtain food (4 min. 16 sec.).

Exp. 40. Problem: Food suspended beyond reach above white table; round stick lying on table.

Response: At once climbs up on table and grasps stick (15 sec.); uses it successfully to knock down food (23 sec.); food falls to floor, immediately climbs down and gets it.

Exp. 41. Problem: Food beyond reach on floor; T-stick and sack lying on table.

Response: Runs towards food as far as her leash will permit, but makes no attempt to reach for food; climbs up on table (18 sec.); climbs down with stick in right hand (34 sec.); holds stick with right hand while raking in food (54 sec.).

Exp. 42. Problem: Food suspended beyond reach above white table; round stick lying on floor within reach about 150 cm. from table.

Response: Notices food, climbs up on table (20 sec.), makes feeble attempt to raise herself on legs; climbs down again (47 sec.); walks, in oscillating curve, towards stick, stands before it and then looks at food; sits down before radiator; after a while walks over to stick, then to table, climbs up again (3 min. 5 sec.); sits on table exactly beneath food; climbs down again (4 min. 54 sec.); walks to Corner A, sits down, at intervals looks at food and other objects; walks over towards stick, picks it up and carries it towards wall AB, drops it on way; climbs up on table, reaches in vain for food, then climbs down again; carries stick towards table and then drops it; climbs up on table and standing on hind legs reaches for food; while climbing down looks constantly at food; picks up stick, carries it in mouth while climbing up on table; at once uses it successfully to knock down food (13 min. 24 sec.).

Exp. 43. Problem: Food beyond reach on floor; sack lying on white table.

Response: Runs towards food but stops and turns towards table; pulls sack from table, then pulls it to point opposite food; whips food within reach (27 sec.).

Exp. 44. Problem: Food beyond reach on floor; newspaper held down and partly covered by heavy box.

Response: Looks at food and then walks towards newspaper, sits on newspaper and bites into it; looks in all directions, occasionally lifting sheets of newspaper, bites off small pieces; gets up (2 min. 30 sec.), sits down before radiator; (3 min.: experimenter adds a few nuts): at once comes over and looks at food, then walks to newspaper and pulls at it, newspaper does not tear; sits down before radiator for several minutes, examines fur, and looks around; (6 min. 30 sec.: experimenter adds

additional nuts): walks towards food and looks at it, then walks towards newspaper and touches it; again sits down before radiator, finally gets up (13 min.) and slowly walks towards food tearing at her leash but does not reach for food; walks over to newspaper and lifts up one of sheets, bites off small piece and takes it to point before radiator, sits down and chews it; (20 min.: experimenter adds more food): monkey comes over towards food as far as her leash permits; walks over towards wall BC and strikes wall with hand; again sits down before radiator; (22 min.: experiment discontinued; animal apparently no longer hungry).

February 28, 11:00 A. M. *Exp. 45.* Problem: Food beyond reach on floor; T-stick within reach and near food.

Response: Immediately runs to stick and grasps it with right hand, pulls in food (5 sec.), cross piece of T-stick towards body while working.

Exp. 46. Problem: Food beyond reach on floor; newspaper partly covered and held down by heavy box; end of round stick fastened to top of "brown" table by means of staples (height of brown table: 81 cm.; size of wooden top: 56×106 cm.); newspaper and table within reach of monkey.

Response: Looks around, climbs up on table and touches stick, climbs down; walks over to newspaper and immediately climbs up on table again, touches stick, climbs down; runs along walls AB and BC and then returns to newspaper, tears off one piece (1 min. 34 sec.), "crushes" and "rolls" piece and bites into it, drops it; climbs up on table and touches stick; climbs down and walks towards radiator, stands and looks around; comes forward and touches piece of paper previously torn off; tears off additional pieces; looks at food; walks towards wall AB; picks up one piece of paper and tries to use it for drawing in food (5 min.) but does not succeed; looks towards table, then climbs up on table, touches stick, climbs down; runs towards food as far as leash will permit, reaches for food; tears off additional pieces of newspaper and carries some of them to point opposite food; again and again uses newspaper pieces to rake across food, finally manipulates one of pieces with hands in various ways so that it attains certain stiffness, uses it successfully in obtaining one strawberry (6 min. 30 sec.).

Exp. 47. Problem: Food beyond reach on floor: rubber toy horse (filled with air) lying on floor within reach.

Response: At once runs over to horse, bares teeth, "talks" to it, touches it, lifts one of its legs, then its head, smells it; runs towards wall AB and returns to pull at one of legs of horse, bites into it: air escapes; pulls horse towards food; runs towards radiator, comes back, gets hold of one of legs of horse and pulls it slightly towards the food; runs in circle around horse, cautiously lifts up one of its legs; runs towards radiator, runs in circle around horse, twice pulls at it to move it towards the food; again runs in circle around horse and pulls at one

of its legs, bites into it; runs around horse and then pushes it slightly towards the food; alternates between running around horse, biting into it, lifting one of its legs, and pushing it slightly towards food; pushes horse to point opposite food, uses horse in same way as a sack (6 min. 5 sec.); continues working until food is whipped within reach (6 min. 15 sec.).

Exp. 48. Problem: Food suspended beyond reach above brown table; end of round stick fastened to table top by means of staples; round stick on floor beyond reach; sack beyond reach and out of sight on platform below ceiling, a string attached to sack hangs down from platform and can be reached from floor.

Response: Looks around, runs towards round stick on floor, looks at food, then runs towards stick on floor as far as leash will permit; climbs up on table (37 sec.), touches stick fastened to table, climbs down again; sits before string hanging from platform; sits before radiator and surveys situation; climbs up on table again (2 min. 30 sec.), looks up at food, pulls at stick fastened to table, raises herself on legs, but does not reach for food; again pulls at stick fastened to table; climbs down from table and, while walking towards string hanging from platform, glances repeatedly from food to string, pulls at string: sack drops to floor (5 min.); looks at food, then pulls sack slightly towards stick on floor; looks at food, sitting near stick on floor, picks up fragments of material from floor; runs towards sack and standing near sack looks at food; climbs half up on table and at once down again; sits before radiator (6 min. 25 sec.); climbs half up on table and holding on to leg of table glances from sack to food, climbs down again; climbs up on table, raises herself on legs and looks at food but does not reach for it; pulls at stick fastened to table; climbs down and walks towards sack, touches it, looks at food, picks up bits of material from sack; walks towards stick on floor and then to place before radiator, sits down; climbs up on table and standing beneath food looks at it; climbs down and then sits for several minutes before radiator; walks towards stick on floor as far as her leash will permit; climbs up on table, at intervals looks up at food, finally raises herself on legs but makes no attempt to reach for food; pulls energetically at stick fastened to table and almost succeeds in breaking it; climbs down and walks over to sack, sits on it and looks around (21 min. 42 sec.); walks towards stick on floor as far as her leash will permit, then goes to place before radiator and sits down, surveys situation; comes forward, grabs string of sack, pulls it towards point opposite stick on floor, throws it over stick and pulls back: stick does not move; climbs up on table, raises herself and attempts to obtain food by direct reaching; climbs down and half-heartedly makes attempts to pull in stick on floor by means of string; climbs up on table, runs around on table top, at intervals looks at food; sits down and utters whining sounds, seems more and more impatient; while climbing down continues to utter various sounds; grasps string of sack and reaches with it towards stick as far as possible

and then drops it on floor; becomes more and more excited, constantly utters sounds; runs faster and faster, climbs rapidly up on table, raises herself to crouching position, pulls at stick fastened to table top, utters whining sounds; climbs down again and walks over to sack, sits down on it (32 min.); works with string to pull stick within reach and as a result stick comes nearer but not within reach; runs along walls BC and AB, sits down before radiator, surveys situation; comes forward and without stopping works with string until stick is within reach (41 min.); carries stick towards table, puts stick in mouth while climbing up, knocks down food holding stick in left hand (41 min. 50 sec.).

Exp. 49. Problem: Food in small wooden box about 142 cm. beyond reach; 100 cm. long string connects box with a wooden circular disc (diameter 12 cm.), with vertical rod, 7 cm. high, in center; string taut between box and disc; disc 30 cm. beyond reach (cf. also Fig. 43 in 11); sack within reach of monkey.

Response: Runs towards disc as far as leash will permit but does not reach for it; runs towards sack and touches it while looking in direction of box and disc; pulls at sack and then runs towards disc; gets sack and throws it repeatedly over disc; stops working (40 sec.), walks towards wall AB, returns and works with sack until disc is within reach; pulls in box by means of string, first using one, then the other hand; obtains food (2 min.).

Exp. 50. Problem: Food beyond reach on floor; available object: round stick, 40 cm. long, attached to string, 67 cm. long; string fastened to iron ring, 16.5 cm. in diameter; ring placed over vertical iron rod set into cement floor of room (height of rod: 10.5 cm. diameter: 1.7 cm.).

Response: Runs towards food and tries to obtain it by direct reaching; runs around picking up fragments of material from floor; notices ring and pulls at it in direction of food; walks over to food and then back to ring, pulls at ring and string; runs around in room; pulls at ring and then detaches it (4 min. 20 sec.) by tipping it from the horizontal into the vertical position (diameter of ring larger than height of rod); at once picks up stick and runs towards food, obtains food by means of stick (4 min. 40 sec.).

Exp. 51. Problem: The same as Exp. 50, except that diameter of iron ring is 4 cm.

Response: Experimenter leaves monkey to herself, returns after one hour and finds that stick has been detached and that food has been eaten.

March 3, 11:00 P. M. *Exp. 52.* Problem: The same as Exp. 50.

Response: Walks over in direction of food but passes it, continues walking towards stick and ring; detaches ring by tipping it with one hand from the horizontal into the vertical position (40 sec.); immediately picks up stick and uses it successfully to obtain food (1 min. 10 sec.).

Exp. 53. Problem: The same as Exp. 51 (diameter of iron ring: 4 cm).

Response: At once walks over to stick, detaches ring by lifting it vertically (10 sec.); uses stick successfully to obtain food (15 sec.).

Exp. 54. Problem: The same as Exp. 51.

Response: While walking in direction of stick picks up bits of material lying on floor; detaches ring by lifting it vertically (11 sec.); grasps stick with right hand, draws in food by sweeping movements from right to left (28 sec.).

Exp. 55. Problem: Wooden box (95 cm. long, 6.5. cm. high, and 13.5 cm. wide) fastened to floor; each end open; box standing on floor parallel to wall BC; half a banana lying in middle of box; 51 cm. long T-stick on floor parallel to box.

Response: Looks through box first from one end and then the other; picks up T-stick and pushes it, with cross piece towards body, into box, cross piece catches behind side wall of box; goes to other end of box and looks through; returns to T-stick and tries for several minutes to push in stick whole length by "rotating" cross piece; picks up fragments of material from floor; again works, succeeds in pushing whole length of T-stick into box (3 min. 30 sec.), cross piece towards body; tries to obtain food by drawing it towards her, while working pulls stick half out of box; peers into box from other end, returns and attempts to push in T-stick by "rotating" it but fails; walks over to iron rod set into floor (cf. Exps. 50–54), stands there a while, walks towards wall AB and then sits down before radiator; (10 min.: experimenter places 70 cm. long round stick on floor, parallel to box): at once picks up round stick and pushes it straight into opening of box, at same end in which T-stick is still partly inserted (10 min. 30 sec.); looks through box from other end and pulls slightly at round stick; returns and "rotates" T-stick and finally pulls it out, goes to other end and tries to draw food towards her by means of round stick; finally gives up and sits down before radiator; gets up and looks through box first from one end and then the other; touches T-stick lying on floor; walks over to box and tries to obtain food by drawing it towards her with round stick, goes to opposite end of box and reaches into it; runs around in room; peers into box first from one end and then the other; grasps T-stick and pushes it, cross piece first, into opening and then pulls repeatedly towards body, fails to obtain food; goes to other end and works with round stick, again trying to draw food towards her, repeatedly pulls round stick entirely out of box but has no difficulty inserting it again; walks towards end in which T-stick is lying and pulls T-stick out of box; works again with round stick, at intervals stops and looks around or goes to opposite end and looks through box; for first time works with round stick at end opposite to the opening in which this stick was inserted; returns to end in which round stick was inserted and works until food is drawn sufficiently near to reach it by hand (18 min. 43 sec.); takes food and then pulls round stick out of box.

Exp. 56. Problem: Food beyond reach on floor; wire (copper wire with triple layer cotton braid insulation) on floor, bent into circular shape (diameter of ring 9 cm.); food can be obtained only after straightening wire; wire ring within reach of monkey.

Response: Picks up ring and carries it to point opposite food, reaches with it towards food, then throws ring towards food but is able to pull it back; frequently turns ring around in hands, then partly throws it, partly reaches with it towards the food; drops ring and oscillates back and forth before food and ring; walks over to wall BC; gazes intently at various objects; picks up ring and throws it in direction of food (3 min. 50 sec.): ring in contact with food but out of reach; (experimenter throws ring back into room): at once gets ring, manipulates it on the way towards food so that there is now a gap of about 3 cm. between ends of wire; again tries to use wire to obtain food, then for the first time carefully looks at it; looks in all directions; grasps one end of wire with right hand and holding on to wire walks around in a circle; walks towards wall BC, drops wire; picks up fragments of material from floor, sits down before radiator (7 min. 35 sec.); after several minutes walks towards food and then to Corner A, sits down, picks up wire and throws it towards food: wire in contact with food and beyond reach; (experimenter puts wire back within reach of monkey): picks up wire and carries it towards radiator, drops it, picks it up again and drops it again; carries wire to point opposite food, throws wire so that it is beyond reach but in contact with food; (experimenter puts wire back within reach of monkey): monkey touches wire, then walks to Corner A and sits down; (15 min.: experiment discontinued).

Exp. 57. Problem: Food suspended beyond reach above floor; cardboard box (41 × 23 × 28 cm.) 100 cm. off center, standing on floor between goal and wall BC.

Response: Looks at goal while walking towards box; comes forward, picks up fragments of material from floor, licks floor; looks at food; sits down before radiator and looks around; comes forward looking at food; pushes box slightly towards goal (3 min. 20 sec.); walks towards wall BC and again picks up fragments of material from floor, while walking her leash is caught behind box and, as a result, box is pushed still farther away from goal; walks slowly towards radiator, lies down facing goal, chin on floor; (10 min.: experimenter adds another piece of banana): at once gets up and looks at box and food which is still slightly swinging, pushes box in direction of food, pauses and looks around, takes a few steps towards food, looks up, walks to point beneath food; comes forward with teeth bared, scratches iron rod set into cement floor; pushes box to point exactly beneath food (14 min. 40 sec.), steps on it, but cannot quite reach food; steps down and pushes box away from food; pushes it back to point beneath food; repeats pushing box away from food and pushing it back beneath food; finally steps on box and obtains food by direct reaching (17 min.).

March 10, 11:00 P. M. *Exp. 58.* Problem: Steel tube (length: 67 cm.; diameter: 5 cm.) securely fastened to legs of brown table; tube parallel to floor and within easy reach of monkey; grape thrown into tube before eyes of monkey; round stick, 70 cm. long, on floor at right angle to tube.

Response: Looks through tube from one end and reaches into it, peers in from other end and reaches into it; picks up stick and inserts it (10 sec.), pushes stick through, goes to other end and pulls out stick; obtains food by direct reaching (19 sec.).

Exp. 59. Problem: Food beyond reach on floor; end of round stick fastened to top of table by means of staples; table within reach of monkey.

Response: Runs towards food and then to table, touches stick; runs to place before radiator and looks around; picks up fragments of material from floor; runs over to table and breaks off stick (1 min. 55 sec.); uses stick successfully to draw in piece of banana (2 min. 10 sec.), eats it, then draws in additional pieces.

Exp. 60. Problem: Food 50 cm. beyond reach on floor; available object: a 35 cm. long stick one end of which is fastened by means of a metal strip to the end of a 21 cm. long stick; sticks are together, that is, their position is such that only by turning one of sticks 180° will the two sticks and the metal strip form a straight line; the sticks thus separated constitute a "flail" which is easily long enough for whipping in the food.

Response: At once picks up sticks and, holding free end of 35 cm.-stick in one hand reaches towards food; carries sticks towards table, notices steel tube (cf. Exp. 58), inserts sticks in tube and immediately withdraws, drops sticks; picks up bits of material lying on floor; seizes sticks again and standing as near to food as possible performs sweeping movements to the left and to the right; reaches with sticks towards food, drops sticks; runs around as if searching for something, looks at ceiling; takes sticks again, grasps free end of long stick first with right hand and then with both hands and performs sweeping movements, at times stops and looks at food; occasionally grasps end of short stick while working (as result of sweeping movements sticks have become sufficiently separated to permit grasping end of short stick); bangs on floor while holding on to end of long stick; suddenly drops sticks and makes strong attempt to obtain food by direct reaching; picks up sticks again, examines metal strip and bites into it; holds metal strip while working with sticks to obtain food; drops sticks (7 min.) and walks towards wall AB; runs over to sticks and then towards table, looks at steel tube; runs towards radiator and then along walls AB and BC, returns to sticks; first grasps end of short stick and then of long one and performs sweeping movements, as result of these movements short and long sticks finally form angle of about 140° which makes it possible to sweep food within reach (9 min. 10 sec.).

Exp. 61. Problem: The same as Exp. 60.

Response: At once picks up sticks but makes no attempt to pull them apart, uses them as a unit holding on to free end of long stick; turns sticks around and holds metal strip while working; drops sticks and walks towards wall AB and then slowly returns to sticks, stands before them and looks around, touches sticks while looking at food and other objects in room; walks towards wall BC, looks at iron rod set into cement floor and bares teeth, walks towards Window 1, comes forward to sit down before sticks, looks at food, at ceiling, and at various objects; finally grasps metal strip of sticks and pushes sticks towards food as far as possible, leaves them in this position; walks towards wall BC, again looks at iron rod set into floor, returns to sticks, pushes them once in direction of food; looks around, walks towards wall AB and then sits down before iron rod; (7 min. 30 sec.: experimenter adds a few pieces of food): at once walks towards food, makes sweeping movement with sticks from the right to the left holding metal strip in one hand, drops sticks, sits several minutes before radiator, walks in direction of food, looks around, and then returns to place before radiator; walks over to sticks (14 min.), grasps free end of long stick with right hand and performs sweeping movement; turns sticks around and works holding metal strip in one hand; walks towards wall AB dragging sticks along by means of tail, drops them in middle of floor; lies down before radiator, chin on floor (15 min. 30 sec.), looking around; gets up and walks towards Door 1, lies on back looking at ceiling (18 min. 30 sec.), then sits there for several minutes; (25 min.: experimenter adds a few pieces of fruit): at once gets up, looks at food, picks up sticks but drops them on way towards food, walks to point opposite food; goes back to pick up sticks, uses them once for reaching towards food, drops them (sticks have not become separated); while walking towards Door 1 looks in all directions; sits down before door, continually looks around (30 min.: experiment discontinued).

Exp. 62. Problem: Food 30 cm. beyond reach on floor; wire ring (diameter of ring: 16.5 cm.; diameter of wire: about .5 cm.; weight of ring: 75 g.) attached to 75 cm. long string (when ring is thrown beyond reach it can be pulled back by means of string).

Response: At once picks up ring and repeatedly reaches towards food with it; then throws ring with either one hand or both hands, pulls ring back by means of string; finally "rings" food, pulls back, and obtains food (1 min. 22 sec.).

Exp. 63. Problem: Food suspended beyond reach above floor; near wall BC wooden box ($56 \times 44.5 \times 8$ cm.), cover consists of white cardboard nailed to box; round stick inside box.

Response: Looks around and immediately walks over to box, bites into one of corners of cardboard cover, looks through hole and notices stick inside box, pulls stick out almost the entire length (2 min.), then pushes it partly back; continues biting off pieces of cardboard, walks

over to other side of box; walks over to Door 1 and then to point beneath food, looks up (3 min. 45 sec.); looks through steel tube attached to brown table (cf. Exp. 58); walks over to box, stands on it, climbs down, pulls out stick; runs directly to point beneath food, knocks down food (4 min. 38 sec.).

March 14, 11:00 A. M. *Exp. 64.* Problem: Steel beam (height 4 cm.) lying on floor just beyond reach, parallel to walls AB and DC; food on floor beyond steel beam; T-stick (length 51 cm.) before steel beam and within reach of monkey, cross piece towards steel beam; round stick (length 70 cm.) at some distance from steel beam and within reach of animal; food can be obtained only by first pushing it away from steel beam and then maneuvering it around beam and towards body; (problem similar to "detour-beam" problem, cf. Fig. 2, except that the two short steel beams at right angles to long beam, for making detour more difficult, are lacking).

Response: Comes slowly forward, grasps T-stick, tries to lift it across beam, but seems too weak to accomplish this; walks over to brown table and looks through steel tube (cf. Exp. 58), walks towards radiator and picks up fragments of material lying on floor; comes forward again, lifts T-stick over beam and then pulls towards body; carries T-stick to brown table and presses it against steel tube, picks up round stick and inserts it in tube, pulls it out again; carries round stick towards steel beam and tries to use it for drawing in food; when pushing stick towards food frequently pushes it against steel beam; pushes round stick energetically towards food and beyond reach; gets T-stick and uses same method, pushes it also beyond reach; (3 min. 30 sec.: experimenter puts both sticks back within reach of monkey): seizes round stick and quickly inserts it in steel tube attached to brown table and then pulls it out again; picks up T-stick and pushes it, with cross piece gliding on floor, against steel beam; grabs middle of T-stick and repeatedly strikes floor with stick; pushes round stick about; looks around; picks up round stick and throws it away, bangs floor with T-stick, finally pushes it behind her with left foot, bites into round stick; walks along wall BC and then towards radiator, picks up tiny bits of material lying on floor; looks around and even inspects ceiling; grasps round stick (7 min.), pushes it against steel beam, bangs with T-stick on floor, takes round stick and touches floor beyond steel beam and then performs sweeping movements to the right and left, finally pushes stick beyond reach: stick "contacts" food; works with T-stick to the right of steel beam, places cross piece behind beam and pulls towards body; (11 min.: experimenter puts round stick back within reach): takes round stick and standing before steel beam performs sweeping movements from the right to the left, pushes a nut towards the left and beyond reach; picks up T-stick and throws it in direction of food and beyond reach: end of stick in contact with food; (experimenter puts T-stick back within reach): again takes round stick and performs a sweeping movement from the right to the left without

touching food; bangs on floor with T-stick, then with round stick, and again with T-stick; (15 min.: experiment discontinued).

Exp. 65. Problem: The same as Exp. 62.

Response: Trial 1: At once picks up ring and either with one hand or with both hands throws it repeatedly towards the food, finally "rings" food (24 sec.) and pulls in ring and food by means of string; trial 2: obtains food within 4 sec.; trial 3: obtains food within 6 sec.

Exp. 66. Problem: Food suspended beyond reach, about 115 cm. above floor; long T-stick (91 cm.) beyond reach, suspended from horizontal bar by hooking cross piece over bar; distance between food and long T-stick about 100 cm.; short T-stick (41 cm.) on floor beyond reach; wire ring (cf. Exp. 62), with 75 cm. long string attached to it, lying on floor before Window 1; short T-stick can be obtained by means of wire ring, long T-stick can be obtained by using short one, food can be obtained by means of long T-stick.

Response: Comes forward and looks at short T-stick, then looks at long T-stick and at food; walks towards wall AB, notices ring, carries it to point beneath food, stops there and looks at food and then at long T-stick, drops ring; comes forward and looks at short T-stick, turns around and looks at long T-stick; walks towards wall AD and from there looks at food; sits down before radiator (3 min. 30 sec.), looks around and utters faint sounds; walks over to ring and looks at long T-stick, walks towards long T-stick, looks at it; walks towards short T-stick and looks at it; picks up ring and looks at food; walks with ring towards short T-stick but drops ring on way; returns to get ring and carries it towards short T-stick and then to point beneath food; walks towards short T-stick and then to point beneath food; walks towards radiator and then towards Door 1; picks up ring and puts it around neck; drags ring by means of string towards short T-stick, drops string on way, walks to point opposite short T-stick and standing in crouching position before stick looks around; walks around room, stands before Door 1 surveying situation; suddenly looks intently at ring, food, and short T-stick, then picks up ring and pulls in short T-stick by means of ring (10 min. 5 sec.); at once carries short T-stick to point beneath food and standing on her hind legs tries in vain to reach food by means of stick; hesitatingly lifts short T-stick with one hand and looks around, drops short T-stick and walks towards long T-stick; walks towards Window 1, looks in all directions; stands between goal and long T-stick glancing from one to the other, then comes forward, picks up ring and carries it to point beneath food; at intervals lifts ring or short T-stick half-heartedly towards food, again and again looks at food, occasionally looks at long T-stick; walks along walls BC and AB, sits down before Door 1; stands up (17 min.), licks up fragments from floor; walks towards food, takes short T-stick, raises herself on legs and reaches for food; drops stick and again sits down before Door 1; walks along walls AB and BC to point beneath long T-stick and looks

at it; walks to point between long T-stick and food, looks from long T-stick to food; stands below food, touches ring and short stick while looking at food; stands near wall AD, licks floor, looks repeatedly at food; stands before radiator and looks in all directions; walks over to long T-stick, looks at it; pushes short T-stick around, suddenly pushes short T-stick to point almost beneath long T-stick and immediately pushes it back to point beneath food; sits down before radiator and looks around; sits down before Door 1 and looks around; walks over to point beneath food, licks floor and at intervals looks at food, continues this for several minutes; walks towards long T-stick, looks at it, then looks at food, makes feeble attempt to raise herself towards long T-stick; walks along wall BC, then towards radiator, looks at food from Corner A; moves short T-stick around and touches ring; comes forward, licks floor, then walks towards Window 1, from there surveys situation; finally lies down flat on belly (38 min.), chin on floor; walks over to long T-stick, looks at it, sits down below long T-stick; walks towards food, all the time picking up fragments from floor; looks at food and long T-stick; sits down before Door 1, looks around; finally gets up and sits down at point nearer to goal, collects fragments; raises herself on legs beneath food and looks at it; grasps short T-stick, looks around; sits down at point between long T-stick and food; walks over to long T-stick and standing on hind legs reaches for it; gets short T-stick and half-heartedly reaches with it towards long T-stick, then tries to strike long T-stick by means of short one but misses (49 min.), at once pushes short T-stick back to point beneath food; sits down before Door 1, then comes forward and walks over towards wall BC and then towards Window 1, again and again looks at food; walks towards long T-stick, raises herself on hind legs and reaches for stick; gets short T-stick and standing on legs reaches with it towards long T-stick, then bites into cross piece; knocks down long T-stick by means of short one (49 min. 30 sec.) and immediately uses long T-stick successfully for knocking down food (49 min. 48 sec.).

Exp. 67. Problem: Two aluminum cups of equal size and shape on floor beyond reach; cups upside down and 30 cm. apart; before eyes of monkey piece of banana is placed under left cup; T-stick within reach of monkey.

Response: At once puts cross piece of T-stick behind left cup and draws in cup, then pulls in banana (6 sec.).

Exp. 68. Problem: Food suspended beyond reach above floor; cardboard box (41 × 23 × 28 cm.), 100 cm. off center, standing between goal and wall BC; T-stick, 51 cm. long, 100 cm. off center lying on floor between goal and wall AD; food can be obtained only by using both box and stick.

Response: At once pushes box in direction of food, then rolls it over: as a result box stands almost beneath food; climbs up and then down again, bites into box; pushes box towards food and then walks over

towards wall AB, sits down before Door 1; comes forward and pushes box around beneath food, steps on it; looks around while standing on box, notices T-stick, gets T-stick, climbs up on box and immediately uses stick successfully to knock down food (4 min. 4 sec.).

March 17, 2:00 P. M. *Exp. 69.* Problem: Cf. Fig. 2, "detour-beam" problem: three steel beams on floor beyond reach of animal, long steel beam (cf. Exp. 64) parallel to walls AB and DC, two short beams at right angles to long one; food beyond long beam, lying in area enclosed by the three steel beams; T-stick within reach of monkey; food can be obtained only by pushing it first away from long beam and around one of the side pieces and then drawing it towards body; so that animal may have no difficulties in lifting stick over beam (cf. Exp. 64) heavy wooden box (30 × 30 × 6.5 cm.) is placed on floor before long steel beam, animal can work from this box.

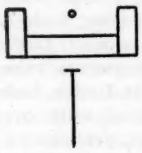

Fig. 2

Response: At once climbs up on box and holding stick in left hand performs sweeping movements to the right and left; drops stick and bites into box; climbs up on box, picks up T-stick, moves cross piece along floor and parallel to long steel beam: as result food is slightly displaced; suddenly pushes stick towards food and beyond reach (1 min 29 sec.); (experimenter puts stick back within reach); bites into box again, once stops and hesitatingly touches stick, then continues biting into box; (5 min.: experimenter removes box): picks up stick, places it on steel beam, cross piece towards food; for several minutes strikes beam with stick, then places it, with end of stick pointing towards food, on beam; runs around; (10 min.: experiment discontinued).

Exp. 70. Problem: Food a few centimeters beyond reach on floor; live albino rat tied by means of string (length 130 cm.) to heavy box; heavy box within reach of monkey and about 85 cm. from food; rat can run to points beyond food.

Response: At once grasps string and pulls rat towards her; lifts rat by means of string, then throws it away: rat runs towards wall AD; pulls rat within reach, picks it up, opens mouth as if to bite head of rat but does not injure it, rat squeals; lets rat run away, then pulls it in again and carries it to point opposite food, attempts to throw it over food; drops rat, runs to wooden box, bites into it; picks up rat and energetically throws it several times in direction of food; preparatory to throwing grabs into fur of rat or gets hold of string near point of contact with body of rat; after throwing does not always pull back immediately but watches movements of rat; pulls back quickly, either straight or diagonally, when position of rat is such that rat, food, and hand holding string form a straight line; if after throwing, rat runs quickly away to a point not in line with the food, monkey pulls back immediately; finally succeeds in pulling in food by means of rat (3 min. 10 sec.).

Exp. 71. Problem: The same as Exp. 70.

Response: At once pulls rat within reach and throws squealing animal in direction of food; carefully watches rat running around and as soon as rat is at a point beyond food pulls back and obtains food (15 sec.).

Exp. 72. Problem: The same as Exp. 70.

Response: At once picks up rat and carries it to point opposite food; throws rat repeatedly in direction of food, works very quickly; at times pulls animal back by means of tail, pulls sideways or straight, according to position of rat; pulls in food with rat (41 sec.).

Exp. 73. Problem: Food suspended beyond reach, 80 cm. above floor; round stick, 65 cm. long, beyond reach; live rat tied to heavy box standing within reach of monkey (length of string: 130 cm.); rat can run to points beyond round stick.

Response: Looks at food, then runs towards stick but does not reach for it; walks towards food and looks at it; touches box to which rat is tied and tries to push it towards the food: box moves slightly; suddenly pulls rat within reach, throws rat beyond stick, pulls stick within reach; at once carries stick to point beneath food and uses it successfully (1 min. 48 sec.).

Exp. 74. Problem: Food suspended beyond reach above floor; cardboard box (41 × 23 × 28 cm.) 150 cm. off center, standing between food and wall BC.

Response: Looks at food and then pushes box about 50 cm. towards food (12 sec.), climbs up on box and immediately down again; picks up tiny fragments from floor, walks towards radiator, looks at food; runs towards box and pushes it towards food; standing on edge of box is able to touch the food (2 min. 6 sec.), food swings slightly but does not fall; climbs down and gives box slight push towards food; walks towards wall BC, looks in all directions, returns to box and pushes it to point almost exactly beneath food; climbs up on box and reaches food comfortably (2 min. 28 sec.).

Exp. 75. Problem: Food suspended beyond reach above floor; cardboard box 375 cm. off center and in contact with wall BC.

Response: Looks around in room, looks at food while standing at point between wall BC and food; walks towards food and then towards wall AB, picks up fragments from floor; walks towards box but does not touch it, walks towards food, sits down before Door 1; walks to point beneath food and looks up; walks towards wall BC, looks around; comes forward, walks towards wall AD; walks in direction of food, looks at it, comes forward, walks towards radiator and then to Corner B; walks along wall BC, all the time picking up bits of material; gives box push towards food (7 min. 25 sec.); comes forward, goes towards food, looks at it; comes forward again and then runs towards radiator,

sits down; walks towards Corner A, along wall AD, and then towards box; stops at about 100 cm. distance from box, turns around and looks at food and at same time bares teeth; walks towards radiator and then sits down before Door 1; walks towards goal, sits down beneath food, looks up; collects fragments from floor while walking towards box, stops and turns around to look at food; walks to Corner B and then lies down before radiator, chin on floor; (14 min. 45 sec.: experimenter adds a few additional pieces of food): at once walks over to food, stands beneath it and grabs leash; quickly walks to box, touches it, climbs up on it, then pushes it forward and in direction of wall BC; bites into box and then pushes it behind her with left foot; walks towards Window 1 and then to Door 1, sits down before door; stands beneath food, at same time grasping leash; runs towards box, before box, turns around and looks at food; pushes box in direction of food, interrupts pushing to bite into box; runs towards food, returns to box and while facing food gives box push away from food; walks to point beneath food, looks around with teeth bared; strikes floor with leash, then looks at food; quickly runs to Corner A, pulls at radiator; sits down before radiator; walks towards food carrying leash in one hand; sits below food, looks at it, holds leash in one hand; walks to place before radiator and looks intently in all directions; walks almost straight towards box and for first time pushes it energetically towards food; interrupts the pushing to bite into box; pushes box with one or with both hands or with whole body to point almost exactly beneath food, climbs up on it and produces swinging movement of food, licks fingers; climbs down and pushes box to point exactly beneath food, climbs up and at once detaches food (41 min. 8 sec.).

March 20, 11:00 P. M. *Exp. 76.* Problem: Food suspended beyond reach above floor; cardboard box 100 cm. off center, standing between food and wall BC; round stick standing against wall AD; food can be obtained only by using both box and stick.

Response: Looks around and immediately pushes box about 50 cm. towards food; climbs up on box and at once down again (12 sec.); fetches stick (30 sec.), climbs with stick up on box and raises stick slightly towards food; climbs down and walks to point beneath food, stands below food; walks to Corner A and along walls AB and BC, at intervals looks at food; pushes box to point exactly beneath food (2 min. 10 sec.), takes stick and knocks down food (2 min. 22 sec.).

Exp. 77. Problem: Food beyond reach on floor; rat running around in room, a 130 cm. long string attached to rat.

Response: At once runs over towards rat; gets hold of string and drags rat to point opposite food; throws rat repeatedly over food, preparatory to throwing grabs into fur of rat (animal squeals) or grasps string near point of contact with rat; obtains food by means of rat (31 sec.).

Exp. 78. Problem: Food beyond reach on floor; rat (no string attached

to it) running around in room; there is the possibility that the rat may run beyond reach of monkey.

Response: Runs towards food but does not reach for it; catches rat and throws it repeatedly over food always holding on to rat's tail; while working, rat is thrown a few centimeters beyond reach: monkey watches rat intently and as soon as rat moves so that tail is again within reach, monkey grabs tail and then continues working with rat; obtains piece of banana by pulling it in with rat (1 min. 38 sec.); while eating, monkey pays no attention to rat which is running around in room; again catches rat and uses it for pulling in additional pieces of food.

Exp. 79. Problem: The same as Exp. 60.

Response: At once picks up sticks and looks at food as if to estimate distance, then reaches with sticks towards food as far as her leash will permit and then puts sticks down; walks towards radiator and then back towards the food all the time picking up fragments from floor; reaches several times with sticks towards food; walks around, picks up sticks, performs one sweeping movement; sits down before radiator (2 min.), looks around; walks along wall AD, grasps sticks and throws them in direction of food and beyond reach; (experimenter puts sticks back within reach of monkey): grasps free end of long stick and swings sticks while completely turning around, as a result sticks become slightly separated; throws sticks towards food and beyond reach; repeats this seven times, experimenter always puts sticks back within reach; (6 min.: experiment discontinued).

Exp. 80. Problem: The same as Exp. 60, except that ends of sticks are fastened together by thin wire instead of metal strips.

Response: Grasps sticks at end at which they are fastened together, throws them towards the food and beyond reach (5 sec.); (experimenter puts sticks back within reach of monkey): takes sticks, throws them over food and beyond reach; (experimenter puts sticks back within reach); goes to place before radiator, picks up fragments from floor; walks towards wall BC, constantly looks around and utters faint sounds, works with sticks, then drops them (sticks now form an angle of about 60°); walks towards Door 1, stands there, looks at various objects in room; (7 min.: experiment discontinued).

Exp. 81. Problem: Food suspended from horizontal bar; T-stick lying on floor at about 150 cm. distance from white table; food cannot be reached from floor by means of stick (only from table).

Response: Walks around table to T-stick lying on floor, stops and looks at food; pushes stick towards table, drops it, kicks it away with hind leg; climbs up on table (1 min. 50 sec.); stands on table top, jerks body towards food but does not reach for it; inspects floor of room; climbs down, stands beneath food, glances at food and stick; walks in a curve towards stick, grasps stick and looks at food; climbs up on

table, looks towards the food and then towards the stick; climbs down and gets stick (3 min. 45 sec.), carries it in mouth while climbing up on table; knocks down food by means of stick (4 min. 10 sec.).

Exp. 82. Problem: The same as Exp. 81, except that T-stick is replaced by 65 cm. long round stick.

Response: Looks around, walks towards table, stands near leg of table and looks around; climbs up on table (21 sec.), looks at food and then at stick on floor, does not reach in direction of food; climbs down and immediately gets stick; carries it in mouth while climbing up on table; repeatedly pushes with stick towards food: food swings but does not fall; grasps stick with right hand, places it behind string and performs sweeping movements: food falls to table (1 min. 17 sec.).

March 24, 10:30 A. M. *Exp. 83.* Problem: Food suspended beyond reach above floor; live rat, in a harness, suspended beyond reach; string to which rat is fastened leads through large screw eye in ceiling to an iron rod (length 15 cm.; diameter .5 cm.) extending horizontally from wall BC; ring (diameter 1.5 cm.) at end of string is slipped over horizontal rod; rod and ring can be comfortably reached from floor; round stick lying beyond reach on floor; rat can be obtained only by detaching ring from horizontal rod: in this case weight of falling rat will pull string with ring through screw eye; if instead of slipping off ring monkey grasps string and pulls downward, rat remains suspended in same position (a nail too large to be pulled through screw eye is fastened as a "stop" to string near screw eye and prevents the rat from being pulled towards the ceiling as the result of a downward pull on the string).

Response: Comes forward and then walks to point beneath rat, looks at it; glances repeatedly from food to stick on floor; stands below food and then explores room; walks towards wall BC and then to point at which ring is slipped over rod; stands at point beneath rat; again explores room; stands opposite stick; from point beneath food walks towards stick as far as leash will permit; walks towards radiator, looking in all directions; walks towards wall BC, pulls ring half off and then, with one additional movement, removes it entirely from horizontal rod: rat drops to floor (5 min. 47 sec.); at once utilizes rat for obtaining stick beyond reach (6 min. 50 sec.); carries stick to point beneath food; successfully uses stick for knocking down food (6 min. 50 sec.).

Exp. 84. Problem: Pieces of carrot in a row beyond reach on floor; live guinea pig, with a 75 cm. string attached to it, running around in room; (weight of guinea pig: 210 g.).

Response: At once runs over to guinea pig, examines it visually and apparently smells it; drags it over to point before food; partly pushes and partly throws animal towards food and then pulls back, repeats this four times; apparently is unable to lift guinea pig entirely from floor, works quickly and does not hesitate touching or handling

animal; guinea pig after being thrown beyond reach runs towards the right: monkey follows and pulls it back by means of string; continues working: as result of several throws some pieces of food are moved still farther out of reach; monkey leaves guinea pig and walks towards wall AB and then to point above which in previous experiment (cf. Exp. 83) rat was suspended, looks towards ceiling (3 min. 50 sec.); walks over to radiator, comes forward again constantly picking up fragments from floor; pulls guinea pig within reach (guinea pig has not moved in the meantime); again pushes and throws guinea pig towards food, preparatory to throwing always gets string out of the way, a few times throws string in direction of food; finally draws piece of carrot within reach by means of guinea pig (7 min. 56 sec.); takes carrot and eats it sitting before radiator; comes forward again, drags guinea pig which has run to middle of room behind her; throws guinea pig beyond food and by pulling in obtains carrot.

Exp. 85. Problem: Cf. Fig. 3, "two-hand test": a wooden bar, 165 cm. long, suspended from horizontal bar of room; heavier end of bar rests on white table; nailed to other end a bar of 55 cm. length with cross piece 43 cm. long; apparatus suspended in such a way that cross piece is parallel to wall AB; three screw eyes equally spaced in cross piece; distance between right and left screw eyes 39 cm.; a white string passes through left and right screw eyes, ends of string hanging down and almost touching floor; food attached to cross piece but not in contact with string; food and cross piece with screw eyes beyond reach of monkey; stake, to which monkey is moored, near wall AB and exactly opposite middle screw eye; leash so short that monkey cannot go beyond point from which ends of string can be reached comfortably; under these conditions cross piece and, therefore, food can be pulled towards floor only by grasping both ends simultaneously and then pulling down; some sacks on table to deaden noise when lever falls back on table.

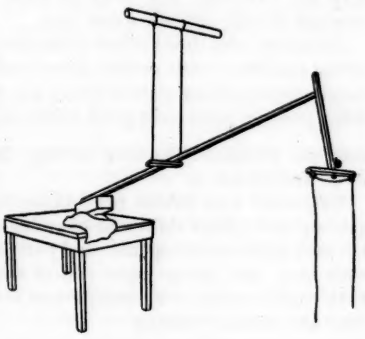

Fig. 3

Response: Grasps right end of string and pulls string to floor (2 sec.).

Exp. 86. Problem: The same as Exp. 85.

Response: Grasps left end of string and pulls string partly downward, as a result right end of string is halfway between floor and cross piece; leaves apparatus and runs around.

Exp. 87. Problem: The same as Exp. 85.

Response: Pulls slightly at right end and then at left end of string; runs around.

Exp. 88. Problem: The same as Exp. 85, except that string is put through middle and right screw eyes so that ends of string form two parallel lines approximately 19.5 cm. apart.

Response: Lies for several minutes flat on belly before radiator, chin on floor; suddenly gets up, grasps left end of string, pulls slightly, then grasps right end of string; keeps ends of string together while pulling downward; continues holding ends of string together with hands while biting off food.

Exp. 89. Problem: The same as Exp. 88.

Response: Grasps left end of string with left hand and right end with right hand and then draws ends of string together; pulls ends downward while sitting on floor; removes food with one hand holding ends of strings together with other hand and the hind legs (10 sec.).

Exp. 90. Problem: The same as Exp. 88, except that string is put through middle and left screw eyes.

Response: Sits down below cross piece, with left hand draws ends of string together; while pulling downward frequently moves right or left hand upwards along ends of string but is careful to keep ends together when pulling; pulls cross piece within reach and obtains food (12 sec.).

Exp. 91. Problem: The same as Exp. 85 (ends of string hanging down at 39 cm. distance).

Response: Lies flat on belly before radiator uttering faint sounds; gets up and grasps right end of string and pulls slightly, then grasps left end, draws ends together and pulls downward; holds ends together with hind feet, grasps right end of string and pulls downward with both hands; works very quietly and obtains food within 15 sec. from time she started working.

Exp. 92. Problem: The same as Exp. 85.

Response: Pulls first at one end and then at other end of string, draws ends together, then holds right end of string with hind feet, grasps left end and uses both hands for pulling it downward; suddenly lets loose apparently because string was causing pain when pulled across shoulder; (string slips out of left screw eye; both ends of string still within reach, hanging side by side from right screw eye); pulls cautiously at one end of string, notices that other end goes upward; holds both ends together while pulling downward; pulls cross piece within reach and obtains food.

March 28, 3:30 P. M. *Exp. 93.* Problem: The same as Exp. 85.

Response: Draws ends of string together and pulls cross piece within reach; holds right end of string with hind foot and left end with one hand while detaching food with other hand (21 sec.).

Exp. 94. Problem: The same as Exp. 85.

Response: Draws ends of string together and pulls cross piece within reach; keeps ends together with right hand while taking food with left hand.

Exp. 95. Problem: The same as Exp. 85.

Response: Draws ends of string together and pulls downward, then holds right end with hind foot and uses both hands for pulling left end; since she has difficulty in detaching food, grasps cross piece with both hands and bites off food (13 sec.).

Exp. 96. Problem: The same as Exp. 85.

Response: Draws ends of string together and then holds them with hind feet; grasps right end of string and uses both hands, pulling downward; pulls cross piece within reach and detaches food with left hand.

Exp. 97. Problem: The same as Exp. 85.

Response: Grasps right end of string and pulls slightly downward; carries right end towards the left and draws ends together, pulls downward; holds ends of string with hind legs while pulling cross piece within reach; obtains food (12 sec.).

Exp. 98. Problem: Food suspended beyond reach from horizontal bar of room; available object: a board, 88 cm. long, mounted on a heavy base, 64 × 64 cm. and rotating freely in the horizontal plane; distance between floor and upper surface of board about 20 cm.; at beginning of experiment, board and horizontal bar are parallel to each other; position of apparatus is such that by rotating board 90°, end of board is brought exactly beneath suspended food: animal can then step on board and obtain food by direct reaching.

Response: Looks at food and then walks towards apparatus; climbs up on base and looks in all directions; walks towards radiator and along walls AB and BC; stands on base, rotates board several times by walking in a circle, looks at food; runs around in room, again rotates board slightly; runs around, picks up fragments of material from floor; looks at food, steps on base of apparatus and twice reaches in direction of food; rotates board: as a result end of board is almost beneath food; raises herself and reaches towards food while standing on base; rotates board so that end is exactly beneath food, then raises herself towards food while standing beside end of board; walks over to brown table near wall AD, climbs up on table and looks around, climbs down again; reaches towards food while standing beside end of board; runs towards wall BC, then returns to apparatus, stands on base and presses against center of board; reaches towards food while standing on base; rotates board, raises herself and reaches towards food standing beside end of board, bites into board; walks towards wall AD, from there surveys room; reaches towards food from base; walks towards wall AD, looks around, walks back to apparatus and again reaches towards food while

standing on base; pulls at base; again rotates board so that one end is brought exactly beneath food; goes to opposite end of board and bites into it, looks at food; walks towards wall AB constantly looking around and uttering faint sounds; suddenly runs to point beneath food and attempts to reach food by means of her leash; reaches towards food from base, climbs down and at once up again, looks at food but does not reach for it; explores room and then returns to base of apparatus; pulls at steel tube fastened to brown table (cf. Exp. 58); explores room looking intently at various objects and at same time uttering sounds; sits down before Door 1, continues vocalization; gets up, collects bits of material from floor, looks around before radiator; holding cord in hand walks towards food, looks at it; pulls at leash with full force as if intending to tear it through; steps on base of apparatus and down again; sits below Window 1, continually uttering high-pitched sounds, looking around, and picking up fragments from floor; walks around in room inspecting various objects; pulls with full force at cord, rotates board: end of board is now below food; whips floor with her leash; steps on base and throws leash in direction of food; rotates board back and forth, then leaves base, with end of board beneath food; walks towards wall AD, returns to point beneath food, bites into end of board, then kicks board away; walks towards wall AD, stands before brown table, collects fragments lying on floor, constantly looks around, climbs up on table (36 min. 30 sec.), looks around; climbs down uttering faint sounds; walks towards apparatus but does not touch it; sits down before Window 1, looks attentively in all directions; steps on base, puts for first time front legs on board, looks at food; runs around; (40 min.: experiment discontinued).

March 31, 3:00 P. M. *Exp. 99.* Problem: Apparatus the same as in Exp. 98, except that one end of board carries a 130 cm. high vertical rod with an 86 cm long horizontal arm at the top pointing away from center of apparatus; food suspended beyond reach above floor from end of horizontal arm; cardboard box on floor before Window 1, horizontal arm with food points towards wall CD; food can be obtained by pushing box beneath food or by both pushing box and rotating board until their relative position is such that food can be reached from box.

Response: Stands before box, steps on base of apparatus, looks at food; walks towards wall AD and then towards brown table, peers into steel tube (cf. Exp. 58); stands between table and food, looks at food; explores room, walks to Corner B, then towards box but does not touch it; picks up fragments from floor, constantly looks around; pushes box towards wall BC (2 min. 15 sec.) and then towards apparatus; steps on base and rotates board about 90°, then grasps vertical rod and walking backward rotates until horizontal arm points towards Window 1; stands beside box, surveys situation, then pushes box to point exactly beneath food, climbs up on box and obtains food by direct reaching (3 min. 35 sec.).

Exp. 100. Problem: The same as Exp. 99, except that cardboard box stands in Corner B.

Response: Glances from box to food; steps on base, raises herself, grasps vertical rod and effects rotation of about 180° by walking towards wall AB; at once walks back so that arm with food points again towards wall CD; continues rotating either by pushing or pulling vertical rod or board, finally leaves apparatus, with horizontal arm pointing towards wall AB; picks up fragments from floor; pushes board and vertical rod so that horizontal arm with food points again towards wall CD; runs around in room, collects fragments lying on floor; passes box in Corner B, walks along wall AB towards radiator, stands before radiator and looks around; suddenly walks towards apparatus and pushes board, bringing about a slight rotation; walks to point beneath food, raises herself on hind legs and grasping vertical rod walks around and around, finally stops with horizontal arm pointing towards wall AB; looks around and then continues rotation; stands near brown table, surveys room; walks towards radiator and then towards box, passes box and returns to apparatus; climbs on base and down again; again rotates board, then bites into it; runs around and examines point at which she is tied to stake; effects slight rotation by pushing board, goes to opposite end of board and then back again, bites into board; effects slight rotation, then stands at point beneath food, looks up but does not reach for it; steps on base as if intending to climb up on vertical rod; comes forward and picks up fragments from floor; again brings about slight rotation; walks towards brown table and then to Corner A, sits down and utters faint sounds; suddenly runs along wall AB to box and starts pushing it around (14 min.); leaves box, walks along wall BC as if searching something, comes forward, looks around and even inspects ceiling; walks towards apparatus, turns board so that arm with food points in general direction of box; stands before radiator uttering sounds and baring teeth; runs towards wall AD and then to Corner A; runs towards box, suddenly stops and looks at food, then grabs box (18 min. 26 sec.) and pushes it to point exactly beneath food, climbs up on it and obtains food by direct reaching (18 min. 41 sec.).

Exp. 101. Problem: The same as Exp. 99, except that horizontal arm with food points towards wall AD.

Response: Runs towards box and pushes it in general direction of food, climbs up on box (23 sec.) and reaches towards food, climbs down and rotates board so that food hangs exactly above box; at once climbs up on box and obtains food by direct reaching (31 sec.).

Exp. 102. Problem: The same as Exp. 99, except that horizontal arm with food points towards wall BC and that cardboard box is replaced by heavy wooden box which cannot be moved; wooden box stands between apparatus and wall AD; food can be obtained by rotating arm with food about 180°.

Response: Walks towards box, looks at food; steps on base of apparatus, grasps vertical rod and by walking backwards effects rotation, but not quite far enough to bring food above box; sits down beside box, makes feeble attempt to push it; stands beneath food, then reaches for it; rotates board sufficiently so that food comes to hang exactly above box; sits down on end of board, as near as possible to vertical rod, and looks at food; climbs down, walks towards box, tries to move it; climbs up on box and obtains food by direct reaching (2 min. 47 sec.).

Exp. 103. Problem: The same as Exp. 102.

Response: At once walks to point beneath food, looks at food and then at box; raises herself on legs, grasps vertical rod and, by pushing, effects rotation of about 90°; walks to box and then to radiator, picks up fragments lying on floor ;walks towards apparatus, grasps board at point at which vertical rod is set in and pulls towards wall AD; steps on box and grasps swinging food (1 min. 15 sec.).

Exp. 104. Problem: The same as Exp. 102.

Response: Walks to point beneath food and looks at it; steps on base, grasps vertical rod and by walking backwards rotates food but not quite far enough to bring it exactly above box; climbs up on box and apparently notices that food cannot be reached; again starts rotating and finally leaves apparatus with horizontal arm pointing towards wall AB; sits down between box and apparatus, looks around, utters sounds; climbs up on bar as if intending to climb up on vertical rod; reaches towards food while standing beneath it; pushes board towards wall AD; while standing between box and apparatus effects rotation by pulling board towards her, steps on box and obtains swinging food by direct reaching (3 min. 25 sec.).

April 4, 3:00 P. M. *Exp. 105.* Problem: Food beyond reach on floor; pointed stick (length 12 cm., diameter 3 cm.) within reach of monkey.

Response: At first tries to obtain food by direct reaching, then grasps stick with right hand and draws in food (8 sec.).

Exp. 106. Problem: A vertical board (2.2 × 20 × 45 cm.), fastened with narrow sides to two stands, beyond reach of monkey; food lying in hole (diameter 2.5 cm.) in center of board, 26 cm. above floor; two sticks, 12 cm. and 35 cm. long, within reach of monkey, both long enough for pushing food through hole.

Response: Picks up long stick and pushes it forward through gap between floor and board; reaches with hand towards food; runs around; picks up long stick and pushes it through gap between floor and board, drops stick; throws body with full force towards food; bangs with stick on floor, finally pushes stick with left hand towards board; runs around; reaches with hand towards food; throws long stick noisily down on floor; "draws" with short stick on floor (cf. p. 304 in 11); (15 min.: a 26 cm. high, heavy box is placed before board so that monkey

can step on it while working): at once climbs up on box and down again; sits down before radiator; climbs up on box and pulls with full force at leash; tries to use long stick, repeatedly pushes either directly or from below against board; (20 min.: experiment discontinued).

Exp. 107. Problem: Food beyond reach, lying on horizontal wooden bar (cross section: 2 × 2 cm.), held 9 cm. above floor by stands; round stick, 35 cm. long, within reach.

Response: Reaches with hand towards food; picks up stick and pushes it first below, then above bar; pulls food off bar by drawing stick towards body; rakes in food lying on floor (1 min. 20 sec.).

Exp. 108. Problem: The same as Exp. 107.

Response: At once picks up stick, tries to knock food off bar by sweeping movements above bar; while working, repeatedly pushes stick beneath bar; drops stick, picks up fragments on floor; uses stick again, pushes it below bar and beyond reach; (experimenter puts stick back within reach): works with stick, frequently performing downward movements or sweeping movements parallel with bar; finally knocks food off bar, immediately rakes in food lying on floor (3 min. 10 sec.).

Exp. 109. Problem: The same as Exp. 107.

Response: Pushes stick forward below bar and then presses upward; moves stick repeatedly down on bar and towards body, succeeds in pulling off food; while drawing in food, lying on floor, repeatedly knocks with stick against horizontal bar; obtains food (32 sec.).

Exp. 110. Problem: The same as Exp. 107, except that there are two horizontal bars, the upper 12.5 cm. above the lower and the lower one 9 cm. above the floor; food on middle of lower bar.

Response: While trying to knock off food by means of stick frequently pushes stick above upper or below lower bar; finally inserts stick in space between bars, then performs sweeping movement: food drops to floor; pulls in food lying on floor (29 sec.).

Exp. 111. Problem: The same as Exp. 110, except that distance between two horizontal bars is 4 cm. instead of 12.5 cm.

Response: Grasps stick; while moving it downward, end of stick gets into space between bars; knocks off food and pulls it in (18 sec.).

Exp. 112. Problem: The same as Exp. 111.

Response: Grasps stick with left hand, pushes it between bars, sweeps to the right — grape drops to floor — and immediately continues sweeping movement on floor pulling grape within reach (3.5 sec.)

Exp. 113. Problem: The same as Exp. 111.

Response: Pushes stick forward above upper bar and pulls back; in

second attempt succeeds in thrusting stick between bars and knocking off food: food falls to point beyond bars; pushes stick repeatedly beneath lower bar and draws towards body; obtains food (25 sec.).

April 7, 3:00 P. M. *Exp. 114.* Problem: Steel tube (length: 37 cm., diameter: 2.2 cm. securely fastened to legs of brown table; tube parallel to floor and within easy reach of monkey; available object: 47 cm. long stick; piece of banana lying in middle of tube; cf. Exp. 58.

Response: Looks through tube, repeatedly tries to obtain food by direct reaching (on account of small diameter of tube can push in arm only up to elbow with great difficulty); beats tube with stick, then throws stick away; pulls at tube; reaches into tube with one hand and strikes tube with other; fetches stick and bangs on floor and tube; looks through tube first from one end and then the other; repeatedly strikes down on tube with both hands; again and again tries to obtain food by direct reaching, repeatedly looks through tube; picks up stick, runs around in room and bangs on floor; picks up fragments from floor, utters whining sounds; tries to reach food directly; takes stick and bangs on floor for several minutes, then peers into tube; continues banging; pushes right hand into tube and at same time strikes tube with left hand; walks around, then returns and bites tube at one end, looks through from opposite end; bites tube now at one and now at other end; pulls at wires by means of which tube is fastened to table; strikes tube with left hand; again and again reaches into tube from both ends; (15 min.: experiment discontinued).

Exp. 115. Problem: The same as Exp. 114, except that steel tube is larger (length: 67 cm.; diameter: 5 cm.); available object: 92 cm. long stick lying on floor.

Response: Reaches into tube first from one end and then the other end; picks up stick (13 sec.), inserts it and pushes it through tube, goes to opposite end, pulls out stick, reaches into tube and obtains food (52 sec.).

Exp. 116. Problem: The same as Exp. 115, except that each end of stick is set into a heavy cork (diameter about 4.5 cm.); each cork pierced by 8 cm. long iron rod at right angle to stick; stick cannot be inserted into tube because of iron cross pieces; animal must bite off cork at least at one end to be able to use stick.

Response: Looks through tube, picks up stick and at once bites into cork first at one end and then at the other; reaches into tube; bites into cork, tries to push in stick, then continues biting; reaches into tube; continues biting into corks; peers into tube, goes to opposite end and half-heartedly pushes part of her leash into tube; again bites into corks; pulls at tube and looks through from both ends; picks up stick and energetically bites into one of corks, succeeds in biting off rather large piece; with both hands grasps end of stick (stick lying almost parallel to tube) and tries to press it into tube, then looks through tube, reaches

into it; runs around in room, looks through tube again and pulls stick towards her; repeatedly looks through and reaches into tube from both ends; walks towards wall AB, drags stick behind her by hooking tail around cross piece of stick; pushes stick along outer side of tube, then looks through, leaves stick lying on floor parallel to tube; looks through tube from one end and then bites into nearest cork; looks through from opposite end and then bites into cork lying near this opening; repeatedly reaches into tube from both ends; looks through from one end, at same time pushing stick behind her; looks through from opposite end, at same time striking tube with hand; pulls at tube; repeatedly looks through tube and reaches into it assuming all kinds of positions; pulls at tube and bites into it at one end; stands on tube, then pushes part of leash into it; picks up stick and continues biting off pieces of cork, then looks around sitting on end of stick; walks to tube and then back to stick, but does not touch it; comes forward and looks around; pulls at tube; walks to Door 1, then sits down before radiator; peers into tube first from one end and then the other, pushes part of her leash into tube; comes forward with teeth bared, uttering sounds all the time; looks around and inspects ceiling; again reaches into tube, then sits down before radiator (24 min.); looks through tube from one end and then tries to push stick straight into opening: cross piece catches behind walls of tube; continues pushing stick alongside tube; goes to opposite side, stuffs slack part of leash into tube and immediately pulls it out again; continues looking through and reaching into tube; sits down before Door 1 and picks up fragments from floor; finally gets up and looks through and reaches into tube from one end; goes to opposite end, touches stick, peers into tube; walks to Door 1, sits down in Corner A; again peers and reaches into tube, goes to opposite end and pulls stick in position for straight pushing-in, leaves stick; sits down before radiator, at intervals gets up and looks through or reaches into tube from both ends; (45 min.: experiment discontinued).

April 12; 2:00 P. M. *Exp. 117.* Problem: The same as Exp. 116, except that only one end of stick has cork with iron cross piece; stick lying on floor, with cross piece towards opening of tube.

Response: Looks through tube first from one end and then the other; pushes stick straight forward and alongside tube, pulls back; repeatedly looks through and reaches into tube from both ends; stuffs slack part of leash into tube and then pulls it out again; with left arm reaches into tube as far as possible; repeatedly pushes stick crosswise against opening of tube: cork holding cross piece falls off; picks up cork with cross piece, bangs with it on floor, bites into cork, then presses it into opening, pulls it out again; thrusts hand into opening and tries to reach food directly; grasps end of stick pointing towards her (stick almost parallel to tube) and tries to push it into opening; leaves stick lying on floor with end pointing almost straight towards opening; looks through from both ends; picks up cork with cross piece and again tries to insert it; attempts to obtain food by direct reaching;

tries to insert stick; goes to opposite end and tries to use cork; succeeds in pushing stick into opening (8 min. 30 sec.) and by drawing towards body maneuvers food within reach (8 min. 48 sec.).

Exp. 118. Problem: The same as Exp. 115; end of stick points towards opening of tube.

Response: Grasps end of stick with both hands and presses it into opening, pushes stick through tube, then pulls partly back; on three different attempts pulls stick out full length while attempting to draw food towards body; each time quickly inserts stick again; maneuvers food towards body until it can be obtained by direct reaching (1 min. 30 sec.).

Exp. 119. Problem: The same as Exp. 115.

Response: Looks through and reaches into tube from one end; looks through from opposite end and pushes stick forward and alongside tube, pulls back, then grasps end of stick with both hands and presses it into opening; pushes stick through tube: food is moved sufficiently so that it can be reached by hand from opposite end (37 sec.).

Exp. 120. Problem: The same as Exp. 117, except that stick is lying on floor at right angle to tube.

Response: Looks through and reaches into tube from one end; goes to opposite end and, putting hand on stick, looks through tube; sits down before radiator; returns and repeatedly looks through from both ends; grasps end of stick without cross piece, inserts stick as far as it will go; walks to opposite end and is able to obtain food by direct reaching (2 min.).

DISCUSSION AND SUMMARY

By way of summary it may be said that the above experiments involved 12 major situations: 1) problems requiring the use of one object; 2) problems requiring the use of two objects; 3) problems requiring the use of more than two objects; 4) problems in which two or more objects were presented and in which only one or several or all of these objects were adequate for the solution (cf. for instance, Exps. 6, 12–17, 28–31); 5) problems requiring the removal of obstacles (Exps. 38 and 39); 6) problems demanding the straightening of an object such as a wire or two sticks held together by a metal strip (Exps. 56, 60, 61, 79, 80); 7) problems requiring the "fabrication" of tools (cf. for instance, Exps. 25, 44, 46, 59, 116); 8) the "detour-beam" problems (Exps. 64, 69); 9) problems necessitating the pushing of food through a tube or a box (Exps. 55, 58, 114, 115, 117–120); 10) problems in which the

solution depended on obtaining a stick by detaching a ring from a vertical rod (Exps. 50–54; cf. also Exp. 83); 11) problems requiring the rotation of the food support relative to another object (Exps. 99–104); 12) "two-hand" problems (Exps. 85–97).

From our description of the problems it can be easily seen that, with the exception of a few experiments, the food to be obtained was either lying beyond reach on the floor or suspended beyond reach above a table or above the floor. In some experiments the food was placed in a box, a steel tube, a glass container, a hole in a vertical board, or on a horizontal bar above the floor.

Special attention should be called to certain experimental situations which constituted rather interesting variations of problems presented in 1931. Of these, the most important were the introduction of live animals (Exps. 70–73, 77, 78, 83 and 84) and the presentation of two joined sticks to be used as a "flail" (Exps. 60, 61, 79 and 80). Other variations demanded the rotation of the food support (Exps. 99–104) or the removal of a cross piece from the end of a stick (Exp. 116).

An analysis of the performances of the monkey reveals that she seemed incapable of solving only two types of problems under the above described experimental conditions. One of these was the "detour-beam" problem and the other required straightening a wire or using two joined sticks as a "flail."

Her failure to complete certain problems (cf. for instance, Exps. 98 and 116) depended upon the fact that she was not sufficiently strong or energetic enough to manipulate objects in the same manner as in 1931. She moved more slowly and cautiously and did not attempt to obtain food by jumping. For example, in Exp. 98 she brought the end of the board, by rotation, several times exactly beneath the food; yet she did not step on the board but, standing *beside* it, merely raised herself repeatedly towards the food. Her behavior clearly indicated that she was afraid of stepping on a rather shaky board and of raising herself while standing on the end of it. The experiment was discontinued after 40 minutes, but the next problem (Exp. 99), which could be solved by rotating the board and pushing a box until their relative positions were such that the food could be reached from the box, was solved in less than 4 minutes. In Exp. 116 she did not succeed in entirely biting off one of the large corks at the end of the stick; yet there is no question that with material offering less resistance

to her teeth she would have succeeded and used the stick as she did in Exp. 117.

Thus ,the results obtained in the 120 tests given in 1934 may be summarized by saying that Cebus monkey P.-Y. was able effectively to utilize objects as tools in 10 of the 12 major problem situations.

If the implement-using behavior in 1934 is compared with that in 1931 (cf. pp. 259–292 in 11), it appears that certain features are characteristic of the monkey's performance in both series of experiments. In both series there was the same quick utilization of chance variations which sometimes developed in the course of a given experiment. In both series there was marked variability in the way a given problem was solved at different times and in the time necessary for finding the solution. This is true despite the fact that a problem when presented a second time was frequently solved more quickly than at first. For instance, in 1931, problem 17 (cf. p. 262 in 11) was solved in 9 min. 30 sec., and when represented immediately, was solved in 3 sec. Similarly, problem 16, in 1934, was solved in 56 min. 30 sec., and immediately thereafter, in 8.2 sec.

If the reactions in the major problem situations in both series are compared, the performance level appears to be about the same in all situations requiring the use of one or more objects. In both series the animal was capable of making the adjustments necessary for the solution of the problem. That even live animals assumed "tool" value is worthy of note. (Gottschaldt [5] who worked with feebleminded children and idiots found that in problems requiring the use of one object, even the slightest change, for instance, in the form of a stick or the color of a string, led to failures). In certain experiments of the second series the animal utilized a smaller number of objects than were designed to be required. Thus, problem 36 was supposed to involve the use of object No. 1 (T-stick) to obtain object No. 2 (sack) and the use of object No. 2, in turn, to secure object No. 3 (round stick), but the monkey eliminated object No. 2 by biting through the string of the T-stick with which she then directly obtained the round stick. In the same way problem 32 was supposed to involve the use of a sack (object No. 1) for whipping a stick (object No. 2) within reach, but the animal eliminated object No. 2 by making the sack into a bundle high enough to reach the food directly. In this con-

nection problems 37 and 48 should also be considered. Both problems were capable of two different solutions. In problem 37, the monkey could either utilize one object (box) or three objects (box, sack, and stick). She used only the box after an interval of an hour and a half. Similarly, she could have solved problem 48 either by simply breaking off a stick or by using a sack for whipping a stick within reach. She solved it in 41 min. 50 sec. by utilizing the two objects. It may be said that in both series the kinds of solutions found in multiple tool problems appeared to be less influenced by the number of objects available than by the special properties of these objects and the relations susbsisting between them.

In analyzing the performances of the monkey in the other problem situations, only three types of situations seemed to show a change in the general level of adjustment. Thus, unquestionably, monkey P.-Y. solved the "two-hand" problem far more adequately and quickly in the second than in the first series of experiments. The same was true, although perhaps to a lesser extent, for the problems in which food lying in a tube or a box had to be obtained by means of a stick. Incidentally, it should be noted that in both the first and second series the animal attempted to secure the food by *drawing* it towards her instead of pushing it through the tube or box. The third type of problem which was far more effectively solved in the second series depended upon lifting a ring from a vertical rod. In fact, in reporting the results obtained in 1931, I questioned whether at that time the problem had been solved at all. Only in one experiment did the monkey, after working for about an hour, succeed in removing the ring and then failed to realize, just as did Köhler's chimpanzee, Rana (12), the availability of the stick. In the second series of experiments the same problem was repeatedly solved without difficulty. It may be suggested that, in comparison with the other problems solved in the second series, the three types of problems which were solved more efficiently depended for their solution more on certain kinds of motor adjustments than on the grasping of a number of significant relations.

After such a brief analysis of the various problems the results obtained in re-examining Cebus monkey P.-Y. after three years can be summarized:

1. All of the problems solved in the second series of experiments were problems which had also been solved in the first series.

2. The problems not solved in the second series had also not been solved in the first series.

3. In the majority of problem situations the kinds of adjustments made by the animal were of the same type as observed in the first series. Problems which were more efficiently and adequately solved demanded, primarily, the making of certain motor adjustments.

In view of the results obtained in the re-tests it seems safe to conclude that the various adjustments the animal made when tested for the first time did not involve such reaction patterns as readily deteriorate with the passage of time.

To throw some light on the factors operative in influencing the reactions of the monkey certain features of the behavior of the animal should be described in more detail. It seems remarkable that the presentation of a piece of food and a few objects should bring about such a range of activity and such a complexity of reactions.

1) Motor activity fluctuated between almost complete absence of all movements on the one hand and a state of violent effort and extreme restlessness on the other. At times the monkey would lie almost motionless on the floor, or, for as long as ten minutes, perform only eye- and head-movements. At other times she would run around incessantly, or would throw her body with full force in certain directions, or would work intently to tear a certain object apart.

2) As regards affective behavior, it was observed that at times she worked calmly even on difficult problems, but at other times was thrown into states characterized by extreme excitement, general tenseness, or vocalization.

3) There were periods in which everything she did was in some specific way "goal-directed," and again, periods in which reference to the goal was almost, or in some instances, even completely lost.

4) The directions and forms of behavior were sometimes determined by only a few objects or a few distinctive features of the situation; at other times, practically everything — the fixtures in the room, dust particles on the floor, the ceiling, or a shadow — became of importance. It seemed as if the properties of a field,

which was clearly organized, gradually or suddenly changed in such a way that the field became more and more "disintegrated."

5) On the one hand, there was a tendency to "contact" only one or a few objects; on the other hand, there were long-continued attempts to "contact" every object with every other object in the room and apparently even with objects out of sight. Various forms and degrees of "contacting" were observed: visual transport (eye-movements); locomotion; transport of objects; pulling, pushing, or reaching in certain directions.

6) The paths taken in approaching a given object varied from an almost straight route to a circuitous and discontinuous approach. Only exceptionally did the animal choose a direct route.

7) Objects or certain properties of objects became important not only as means towards the end of satisfying hunger but also as means towards satisfying other needs or interests. Certain objects, for instance, would be reacted to simply because they could be torn to pieces or thrown about or used for producing noise. To illustrate: one of the first responses of P.-Y. in Exp. 63 was to tear a hole in the cardboard cover of the box. This, she did, of course, not because she realized the presence of the stick inside the box, but evidently because she enjoyed biting into cardboard for its own sake. The point of importance is that forms of behavior induced by the fact that a given object was "tearable," "breakable," or "soft," etc., led in such instances to certain modifications of the stimulus situation which were significant for the solution of the problem and were often suddenly recognized as such by the animal.

As regards the aspects of behavior just mentioned, the behavior of the monkey seemed essentially similar in the first and second series of experiments. In addition, certain other features were common to both series. Thus, in handling objects or in using sticks, no preferential use of the right or left hand was observed. Before or while making motor adjustments, the animal was, when not affectively disturbed, extremely accurate in most instances in estimating distances and in taking into account any change in the position of the objects towards which the actions were directed. In both series she frequently used a T-stick with the cross piece towards her body, and she often made use of the friction between the piece of banana and the stick in getting the food within reach. Expressions, such as baring her teeth, putting her finger in her

mouth, or "talking" to objects, likewise appeared in both series. The differences noted in the second series of experiments seemed chiefly due to her diminished strength and vitality. Thus, the running "in an arc" and the "rocking" movements reported in the first series were absent; she was more easily discouraged if, as the result of a few manipulations, a given object did not immediately break, tear, or fall; she was also less likely to throw objects around or beyond reach. An interesting change occurred in the way she carried a stick while climbing up on a table; instead of holding it in one of her hands she carried it in her mouth.

It is true that extremely simple forms of instrumentation, such as the use of a stick or a box, have occasionally been observed in Old World monkeys and even in animals below the primates. Bierens de Haan reports the use of a box in *Nasua narica* (1). Protopopov (13) found that certain baboons were able to employ a stick for obtaining food beyond reach. A young Java monkey observed in my laboratory was capable of whipping in food by means of a sack; it should be mentioned, however, that this monkey had been kept for weeks in a cage by herself and had frequently manipulated and played with sacks used as bedding material. The evidence available at present indicates that in these instances even extensive training does not raise the level of instrumentation. In this connection the results recently obtained by Guillaume and Meyerson (8) are pertinent: «Nos Singes inférieurs et Anthropoïdes inférieurs, adultes au jeunes, n'ont rien compris ni rien appris, en dépit d'essais répétés faits sur eux...»

In view of the findings published in the literature (cf. references in 11) and in the light of results I recently obtained on other Cebus monkeys, it appears that so far only monkeys belonging to the genus *Cebus* have been shown to equal anthropoid apes in their ability to utilize objects as tools. In closing, attention should be called to the interesting fact that Dubois' coefficient of cephalization (3, 10) is higher in Cebus monkeys than in anthropoid apes. In a personal communication Professor Dubois [1]) informs me that "the coefficient in this genus is certainly between 1.0 and 1.2" and that the Cebus monkey, therefore, surpasses the anthropoid apes by one-third or one-half.

[1]) I take this opportunity of thanking Professor Dubois for his kind permission to quote from his letter.

REFERENCES

1. BIERENS DE HAAN, A. J., Versuche über die Verwendung der Kiste als Schemel bei einigen Procyoniden (Wasch- und Nasenbären), nebst einigen Bemerkungen über das konkrete Verständnis der Tiere im allgemeinen. *Zsch. f. Psychol.*, 1934, *131*, 193.
2. BIERENS DE HAAN, J. A., Werkzeuggebrauch und Werkzeugherstellung bei einem niederen Affen (Cebus hypoleucus Humb.). *Zsch. f. vergl. Physiol.*, 1931, *13*, 639.
3. DUBOIS, E., Die gesetzmässige Beziehung von Gehirnmasse zu Körpergrösse bei den Wirbeltieren. *Zsch. f. Morphol. u. Anthropol.*, 1914, *18*, 323.
4. FULTON, J. F., & JACOBSEN, C. F., The function of the frontal lobes, a comparative study in monkeys, chimpanzees and man. *Setchenov J. Physiol. USSR*, 1935, *19*, 113.
5. GOTTSCHALDT, K., Der Aufbau des kindlichen Handelns. Vergleichende Untersuchungen an gesunden und psychisch abnormen Kindern. *Zsch. f. angew. Psychol.*, 1933, Beiheft *68*. Pp. VI + 227.
6. GUILLAUME, P., & MEYERSON, I., Recherches sur l'usage de l'instrument chez les singes. I. Le problème du détour. *J. de psychol.*, 1930, *27*, 177.
7. GUILLAUME, P., & MEYERSON, I., Recherches sur l'usage de l'instrument chez les singes. II. L'intermédiaire lié à l'objet. *J. de psychol.*, 1931, *28*, 481.
8. GUILLAUME, P., & MEYERSON, I., Recherches sur l'usage de l'instrument chez les singes. III. L'intermédiaire indépendent de l'objet. *J. de psychol.*, 1934, *31*, 497.
9. JACOBSEN, C. F., WOLFE, J. B., & JACKSON, T. A., An experimental analysis of the functions of the frontal association areas in primates. *J. Nerv. & Ment. Dis.*, 1935, *82*, 1.
10. KAPPERS, C. U. A., The evolution of the nervous system. Haarlem: Bohn, 1929. Pp. VI + 335.
11. KLÜVER, H., Behavior mechanisms in monkeys. Chicago: Univ. of Chicago Press, 1933. Pp. XVII + 387.
12. KÖHLER, W., Intelligenzprüfungen an Menschenaffen. Berlin: Springer, 1921. Pp. 194.
13. PROTOPOPOV, V. P., Les conditions de la formation des habitudes motrices et leur characteristique physiologique. Kiev & Kharkov: Edition médicale d'état d'Ukraine, 1935.
14. YERKES, R. M., & YERKES, A. W., The great apes. New Haven: Yale Univ. Press, 1929. Pp. XIX + 652.
15. ZUCKERMAN, S., Functional affinities of man, monkeys, and apes. New York: Harcourt, Brace and Co., 1933. Pp. XVIII + 203.

RÉSUMÉ

L'auteur a montré en 1931 que le singe inférieur peut égaler l'anthropoïde dans son emploi d'instruments. La femelle Cebus dont il s'est servi pour ses recherches a été soumise à 207 expériences. Les réactions de cet animal aux divers problèmes expérimentaux ont été décrites en détail dans H. Klüver: Behavior mechanisms in monkeys (University of Chicago Press, 1933).

Ce même singe Cebus, après trois ans, a été soumis à une série d'expériences de même nature (emploi d'un ou de plusieurs objets comme instruments, déplacement d'obstacles, problèmes du détour, fabrication d'instruments, etc.). Pendant les trois années d'intervalle l'animal n'avait été soumis à aucune espèce d'expérience. Dans cet article on trouvera la description detaillée des réactions observées au cours de la seconde série d'expériences.

Tous les problèmes résolus au cours de la seconde série d'expériences l'avaient été au cours de la première. Ceux qui ne furent pas résolus au cours de la seconde série ne l'avaient pas été non plus au cours de la première. Les problèmes qui exigeaient que le singe redresse un fil de fer ou qu'il commence par repousser la nourriture ne furent pas résolus. Par contre, l'animal résolut rapidement des problèmes pour lesquels il devait se servir d'un bâton qu'il ne pouvait obtenir qu'en détachant un anneau d'une barre verticale. En général les problèmes de la seconde série qui furent résolus plus rapidement et facilement paraissaient dépendre surtout de l'habileté motrice. Il est intéressant de constater que le singe se servit même d'animaux vivants (rat, cobaye) comme instruments. Il est arrivé à ce singe de travailler sans interruption au même problème pendant une heure ou même d'avantage jusqu'à ce qu'il en eût trouvé la solution.

Pour terminer l'auteur résume différentes observations concernant des réactions à des situations créées aux cours des expériences. Il signale le fait que le coefficient de céphalisation de Dubois est plus élevé chez le singe Cebus que chez l'anthropoïde.

ZUSAMMENFASSUNG

Verfasser hat in einer 1931 ausgeführten Arbeit gezeigt, dass niedere Affen in bezug auf Werkzeuggebrauch in ihren Leistungen an die anthropoiden Affen heranreichen können. Der in diesen Versuchen benutzte weibliche Cebusaffe wurde in 207 Situationen geprüft. Die Reaktionen des Versuchstieres sind in einer früheren Veröffentlichung eingehend beschrieben worden (cf. S. 259–292 in H. Klüver: Behavior mechanims in monkeys. University of Chicago Press, 1933).

Derselbe Cebusaffe wurde nach einem Zeitraum von drei Jahren einer Nachprüfung unterzogen, in der im wesentlichen Aufgaben derselben Art gestellt wurden (Gebrauch eines oder mehrerer Gegenstände als Werkzeug, Beseitigung von Hindernissen, Umwegversuche, Werkzeugherstellung usw.). In den seit der ersten Versuchsreihe verflos-

senen drei Jahren wurden mit dem Affen keinerlei Experimente angestellt. In der vorliegenden Arbeit wird eine eingehende Beschreibung des in der zweiten Versuchsreihe beobachteten Verhaltens geliefert (120 Versuche).

Sämtliche in der 2. experimentellen Serie (1934) vom Tier gelösten Aufgaben waren Aufgaben, deren Lösung dem Affen auch in der 1. experimentellen Serie (1931) gelungen war. Die vom Tier in der 2. Serie nicht gelösten Aufgaben stellten Aufgaben dar, die das Tier auch in der 1. Serie nicht gelöst hatte. Ein Vergleich der beiden Versuchsreihen ergab im grossen und ganzen keine Unterschiede im Leistungsniveau und in den Typen der Lösungsversuche.

Im einzelnen zeigte sich, dass Aufgaben, in denen der Affe zur Erlangung des Ziels die Frucht erst vom Körper wegschieben oder etwa einen Draht zurechtbiegen musste, nicht gelöst wurden. Dagegen wurden Aufgaben, die das Abheben eines Ringes von einer vertikalen Stange erforderten, prompt gelöst. Im allgemeinen wurden schnellere und glattere Lösungen nur in Situationen beobachtet, die vorzugsweise motorische Geschicklichkeit erforderten. Von besonderem Interesse ist, dass auch lebende Tiere (Ratte, Meerschweinchen) als Werkzeug benutzt wurden. Unter Umständen arbeitete der Affe ohne Unterbrechung eine oder sogar anderthalb Stunden bis zur Lösung der Aufgabe.

Zum Schluss stellt der Verfasser die in den verschiedenen Aufgabesituationen beobachteten und für eine Analyse des tierischen Verhaltens bedeutsamen Verhaltensweisen zusammen. Es wird darauf hingewiesen, dass der Koeffizient der Cephalisation (Dubois) bei dem Cebusaffen grösser ist als bei den Anthropoiden.